

---

# GPS AutoSteer System Installation Manual

---



## Supported Vehicles

### Fendt Favorit

711  
712  
714  
716

### Fendt

711      815  
712      817  
714      818  
716      820  
718

---

# LEGAL DISCLAIMER

---

**Note:** Read and follow ALL instructions in this manual carefully before installing or operating the AutoSteer system.

---

**Note:** Take careful note of the safety information in the Safety Information section and throughout this manual.

---

The manufacturer disclaims any liability for damage or injury that results from failure to follow the instructions and warnings set forth herein.

**Please take special note of the following warnings:**

1. There is NO obstacle avoidance system included in the manufacturer's product. Therefore, users must always have an operator on the equipment when the AutoSteer system is in use to look for any obstacles including people, animals, trees, ditches, buildings, etc.
2. During installation of the AutoSteer system and during the Calibration and Tuning processes the vehicle's wheels turn from side to side and the vehicle moves. Be sure that all people and obstacles are clear of the vehicle before installation, calibration and tuning, or use of the AutoSteer system.
3. Use of the AutoSteer system is NOT permitted while the vehicle is on public roads or in public areas. Ensure that the system is OFF before driving on roads or in public areas.

---

## Special Requirements

### *Tools*

This list consists of the tools required to complete the installation. The installer is assumed to have a complete set of common installation tools.

|                                |                        |                                  |
|--------------------------------|------------------------|----------------------------------|
| #1 Phillips screwdriver        | 3/8" open wrench       | 1/8" Allen wrench                |
| #2 Phillips screwdriver        | 7/16" open wrench      | 3/16" Allen wrench               |
| #2 Phillips stubby screwdriver | 1/2" open wrench       | 5/32" Allen wrench               |
| 1/2" socket and ratchet        | 9/16" open wrench (2)  | 1/4" Allen wrench                |
| 9/16" socket and ratchet       | 11/16" open wrench     | 4mm Allen wrench                 |
| 15/16" socket and ratchet      | 3/4" open wrench       | 9mm Drill bit                    |
| 8mm socket and ratchet         | 13/16" open wrench     | Power drill                      |
| 10mm socket and ratchet        | 7/8" open wrench       | Tape measure 12ft (3.6m) minimum |
| 13mm socket and ratchet        | 15/16" open wrench     | Electrical tape                  |
| 17mm socket and ratchet        | 1-1/8" open wrench     | 3500 or 5000 psi pressure gauge  |
| 18mm socket and ratchet        | Hack saw               |                                  |
| 24mm socket and ratchet        | 10 ft (3 meter) ladder |                                  |

---

# Safety Information

## Warning Alerts


The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:


- As the operator of the vehicle, you are responsible for its safe operation.
- The AutoSteer system is *not* designed to replace the vehicle's operator.


---



**Note:** Verify all screws, bolts, nuts, and cable connections are tight after the final installation of the AutoSteer system on the vehicle.



---



|   |   |
|---|---|
|  | <b>⚠ WARNING</b>  |
|   | To avoid electrical shock hazards, remove the Roof Module from the vehicle before driving under low structures or low electrical power lines. |



|   |   |
|---|---|
|  | <b>⚠ WARNING</b>  |
|   | To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module. |

|   |   |
|---|---|
|  | <b>⚠ WARNING</b>  |
|   | To prevent accidental death or injury from being run over by the vehicle, never leave the vehicle's operator chair with the AutoSteer system engaged. |

|   |  |
|---|--|
|  | <div data-bbox="430 277 1089 346"> <b>WARNING</b></div> <div data-bbox="430 346 1089 522"><p><b>High-Pressure Fluid Hazard</b></p><p>Read this manual before installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.</p></div> |
|---|--|

|   |  |
|---|--|
|  | <div data-bbox="430 609 1089 678"> <b>WARNING</b></div> <div data-bbox="430 678 1089 825"><p>To understand the potential hazards associated with the operation of AutoSteer system equipment read the provided documentation before installing the AutoSteer system on a vehicle.</p></div> |
|---|--|



|  |  |
|--|--|
|  | <div data-bbox="430 913 1089 982"> <b>WARNING</b></div> <div data-bbox="430 982 1089 1127"><p>To prevent the accidental engagement of AutoSteer and loss of vehicle control while driving on roads, shut down the AutoSteer system (exit the program). Never drive on roads or in public areas with the AutoSteer system turned on.</p></div> |
|--|--|



|   |   |
|---|---|
|  | <div data-bbox="430 1215 1089 1285"> <b>WARNING</b></div> <div data-bbox="430 1285 1089 1432"><p>Do not stand close to the wheels and do not move the machine while you are adjusting the Relief Valve. Turn off the engine and engage the parking brake before standing under or next to the machine.</p></div> |
|---|---|



---



## Caution Alerts

The AutoSteer system installer and manufacturer disclaim any responsibility for damage or physical harm caused by failure to adhere to the following safety requirements:



|   |  |
|---|--|
|  |  <b>CAUTION</b>   |
|   | The Roof Module must be removed when transporting or driving the vehicle at speeds above 30 mph (50 km/h). The Roof Module can possibly detach due to wind loads at higher speeds. |



|   |  |
|---|--|
|  |  <b>CAUTION</b>   |
|   | The AutoSteer system does not detect obstacles in the vehicle's path. The operator must observe the path being driven in order to avoid obstacles. |

|   |   |
|---|---|
|  |  <b>CAUTION</b>                                |
|   | When engaged, the AutoSteer system controls only the steering of the vehicle. The operator must control the speed of the vehicle. |

|   |  |
|---|--|
|  |  <b>CAUTION</b> |
|   | The AutoSteer system must be powered OFF when installing or removing the Roof Module.              |

---

|   |  |
|---|--|
|  |  <b>CAUTION</b> |
|   | The AutoSteer system must be powered OFF when starting or cranking the vehicle's engine.         |

|   |  |
|---|--|
|  |  <b>CAUTION</b>   |
|   | The Roof Module must always be firmly secured to the Roof Rail using the hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling. |

## Vehicle Requirements

The vehicle steering and hydraulic systems must be in good working order before installing the AutoSteer system. Check for loose or worn parts. Before installing the AutoSteer system drive the vehicle and confirm that it steers straight and the wheels can be turned from lock to lock. Check the steering system hydraulic hoses and connections to ensure there are no oil leaks.

The vehicle electrical system and battery must be in good working order.

The vehicle should be fully cleaned before installing the AutoSteer system. A clean vehicle will improve the overall installation and cable routing and will also reduce the chance for oil contamination when the hydraulic connections are opened. It is important to clean the area around the steering unit (Orbitrol), under the cab and behind the rear cab cover.

---

## Important Information

---

**Note:** Verify all screws, bolts, nuts, hose, and cable connections are tight after final AutoSteer system installation.

---

## Technical Support

Refer to your Display user manual for technical support information.

## Contact Information

Refer to your Display user manual for contact information.

Copyright © 2010 All Rights Reserved.



---

# Table of Contents

---

|                  |   |            |
|------------------|---|------------|
| <b>Chapter 1</b> | <b>Installation Overview .....</b>                            | <b>1</b>   |
|                  | Vehicle Inspection .....                                      | 1          |
|                  | Installation Kit Overview .....                               | 2          |
|                  | Sub-Assemblies .....  | 3          |
|                  | Installation Procedure Outline .....                          | 8          |
|                  | Cable Diagram .....   | 9          |
| <b>Chapter 2</b> | <b>Steering Valve Installation .....</b>                      | <b>11</b>  |
|                  | Steering Valve Installation Procedure Overview .....          | 12         |
|                  | Steering Valve Configuration .....                            | 13         |
|                  | Steering Valve Configuration Procedure .....                  | 14         |
|                  | Steering Valve and Hydraulic Component Installation .....     | 16         |
|                  | Late Model Valve And Hydraulic Installation .....             | 18         |
|                  | Early Model Valve And Hydraulic Installation .....            | 44         |
|                  | Steering Valve Installation Checklist .....                   | 70         |
| <b>Chapter 3</b> | <b>Wheel Angle Sensor (WAS) Installation .....</b>            | <b>71</b>  |
|                  | Installing Mounting Brackets .....                            | 71         |
|                  | Cutting Linkage Rods to Length .....                          | 75         |
|                  | Assembling Linkage Rod Hardware .....                         | 76         |
|                  | Attaching and Adjusting Wheel Angle Sensor Linkage Rods ..... | 79         |
| <b>Chapter 4</b> | <b>SA Module Installation .....</b>                           | <b>89</b>  |
|                  | SA Module Mounting Orientation .....                          | 89         |
|                  | Mount the SA Module .....                                     | 90         |
| <b>Chapter 5</b> | <b>Display Installation .....</b>                             | <b>93</b>  |
|                  | Introduction .....  | 93         |
|                  | Installation Procedure .....                                  | 94         |
| <b>Chapter 6</b> | <b>Roof Module Installation .....</b>                         | <b>99</b>  |
|                  | Safety Notes .....  | 99         |
|                  | Roof Module Installation .....                                | 100        |
| <b>Chapter 7</b> | <b>Connecting System Cables .....</b>                         | <b>107</b> |
|                  | SA Module Harness .....                                       | 107        |
|                  | SA Module Connection .....                                    | 108        |
|                  | Wheel Angle Sensor Connection .....                           | 110        |
|                  | Steering Valve Connection .....                               | 111        |
|                  | Main Cable Harness .....                                      | 115        |
|                  | Roof Module .....   | 115        |
|                  | Display .....   | 119        |
|                  | Power Supply Connection .....                                 | 119        |
|                  | Cab Power Connection .....                                    | 120        |
|                  | Battery Power Connection .....                                | 121        |
|                  | Install Warning label .....                                   | 121        |

---

|                  |   |            |
|------------------|---|------------|
| <b>Chapter 8</b> | <b>Post-Installation Procedures and Information .....</b> | <b>123</b> |
|                  | Adjust the Relief Valve .....                             | 123        |
|                  | Create New Vehicle .....                                  | 126        |
|                  | Calibration and Tuning Guidelines .....                   | 126        |
| <b>Chapter 9</b> | <b>Final Hardware Installation Checklist .....</b>        | <b>127</b> |

# Installation Overview

---

The **Installation Overview** chapter information is provided in the following sections:

- *Vehicle Inspection*
- *Installation Kit Overview*
  - *Sub-Assemblies*
    - *Steering Valve Kit Components*
    - *Hose Kit Components*
    - *Bracket Kit Components*
- *Installation Procedure Outline*
- *Cable Diagram*

This installation guide describes the installation of the AutoSteer system on several models of Fendt vehicles. The following models use the AutoSteer installation kit PN: 188-0053-01:

- Fendt Favorit 711, 712, 714, 716
- Fendt 711, 712, 714, 716, 718, 815, 817, 818, 820

The vehicle specific sub-assemblies for the vehicle series are listed in *Table 1-1*.

## Vehicle Inspection

The vehicle steering system must be in good working condition prior to the installation of the AutoSteer system. Verify the existing steering system is operating correctly by performing the tests listed below in a wide open area.

---

**Note:** The steering system test requires a relatively large area. Ensure you have enough room to perform the test before beginning.

---

1. Drive the vehicle in a low gear and slowly turn the steering wheel full left. The vehicle should steer to the left at a steadily increasing rate until it is making a sharp left turn.
2. Drive the vehicle in a low gear and slowly turn the steering wheel full right. The vehicle should steer to the right at a steadily increasing rate until it is making a sharp right turn.

---

**Note:** The change in steering speed and angle should be identical when turning left or right.

---

3. On flat terrain, drive the vehicle in a straight line in a low gear and release the steering wheel. The vehicle should continue to drive fairly straight without pulling hard left or right.

**Note:** This vehicle has reactive steering so large bumps on the ground may cause the front wheels and steering wheel to move. Also, if the wheels are turned to full lock left or right and the steering wheel is let go, the steering wheel will move back towards center and the front wheels will gradually straighten themselves out.

4. Ask the vehicle driver or owner if they have experienced any vehicle steering problems. The operator should report no steering problems.

If the vehicle passes the four tests, proceed with the AutoSteer system installation. If the vehicle fails one or more of the tests, the steering system must be evaluated by a dealer and repaired if necessary.

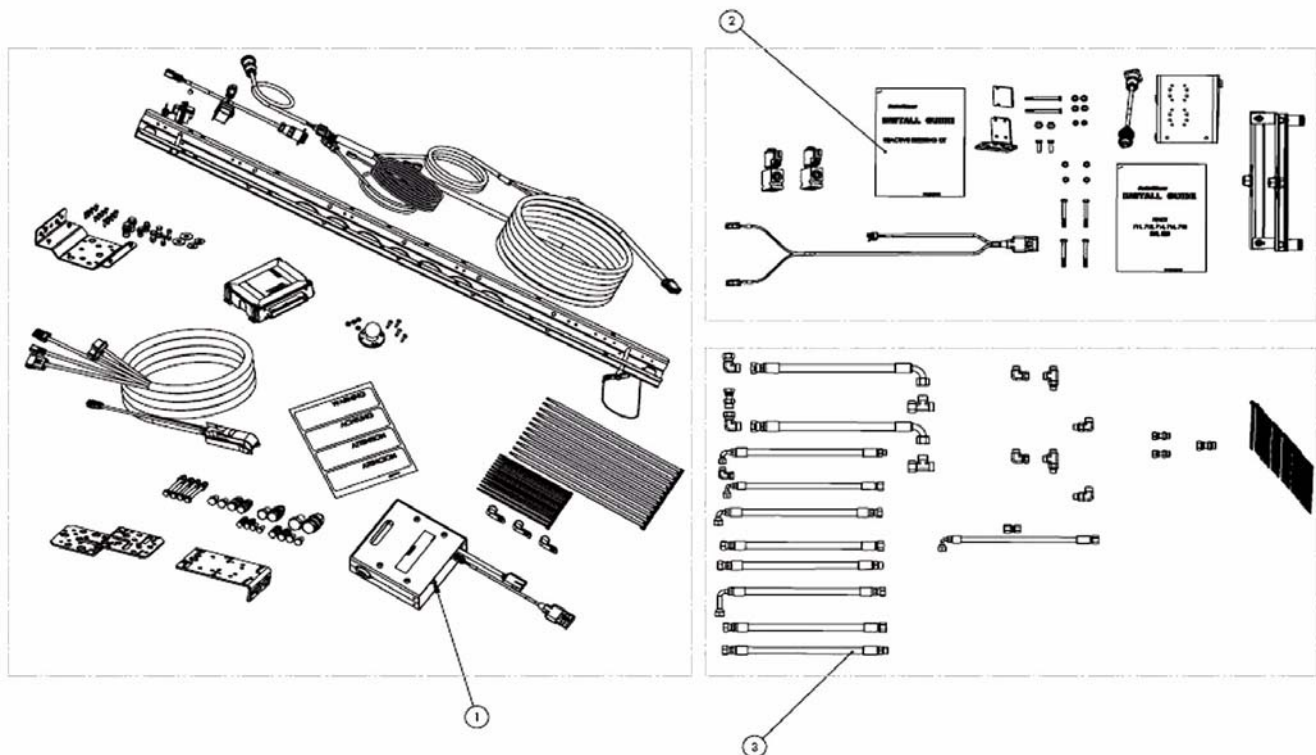
**Possible causes of steering problems:**

- Worn joints in steering cylinders and tie rods
- Hydraulic problem

## Installation Kit Overview

This Installation Kit Overview section is divided into sub-sections for each of the sub-assemblies as shown in *Figure 1-1*. The components in each sub assembly are described in the following sections.

**Figure 1-1 Installation Kit Components (PN: 188-0053-01)**



**Table 1-1 Installation Kit Component Descriptions (PN: 188-0053-01)**

| Item | Component          | Part Number |
|------|--------------------|-------------|
| 1.   | Steering Valve Kit | 153-0001-01 |
| 2.   | Bracket Kit        | 152-0072-01 |
| 3.   | Hose Kit           | 500-0380-01 |

## *Sub-Assemblies*

This vehicle installation kit contains the following components:

- *Steering Valve Kit Components*
- *Hose Kit Components*
- *Bracket Kit Components*

# Steering Valve Kit Components

Figure 1-2 Installation Kit Components (PN: 153-0001-01)

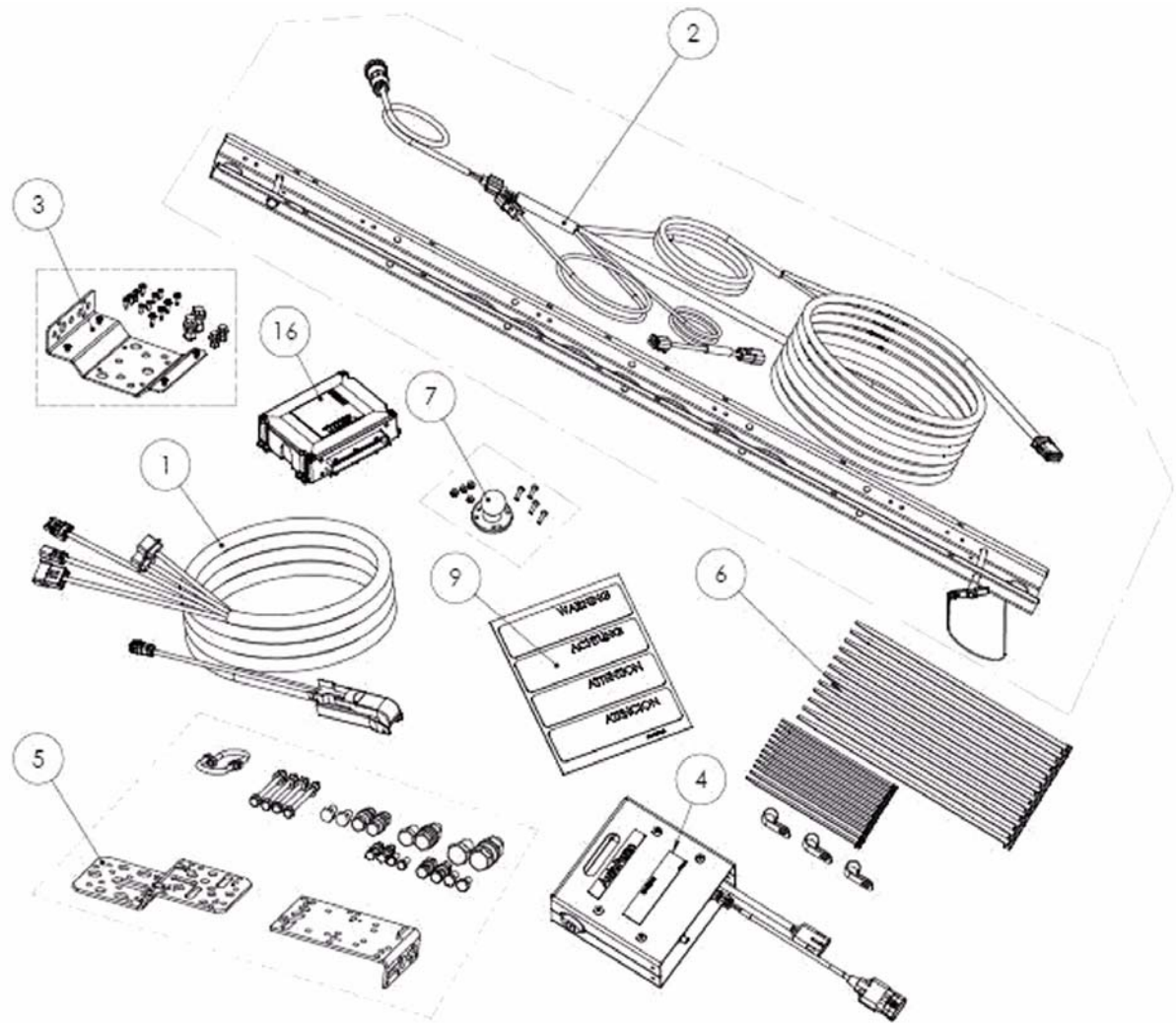


Table 1-2 Installation Kit Components (PN: 153-0001-01)

| Item | Component               | Part Number |
|------|-------------------------|-------------|
| 1.   | SA Module Harness       | 201-0371-02 |
| 2.   | Common Installation Kit | 200-0497-02 |
| 3.   | SA Module Bracket       | 200-0190-01 |
| 4.   | Valve Assembly          | 200-0457-01 |
| 5.   | Valve Bracket Kit       | 200-0434-01 |
| 6.   | Mounting Hardware       | 200-0076-01 |

| Item | Component                      | Part Number |
|------|--------------------------------|-------------|
| 7.   | Display Mounting Base Assembly | 200-0508-01 |
| 9.   | Warning Labels                 | 603-0074-01 |
| 16.  | SA Module Assembly             | 200-0206-01 |

## Hose Kit Components

Figure 1-3 Hose Kit Components (PN: 500-0380-01)

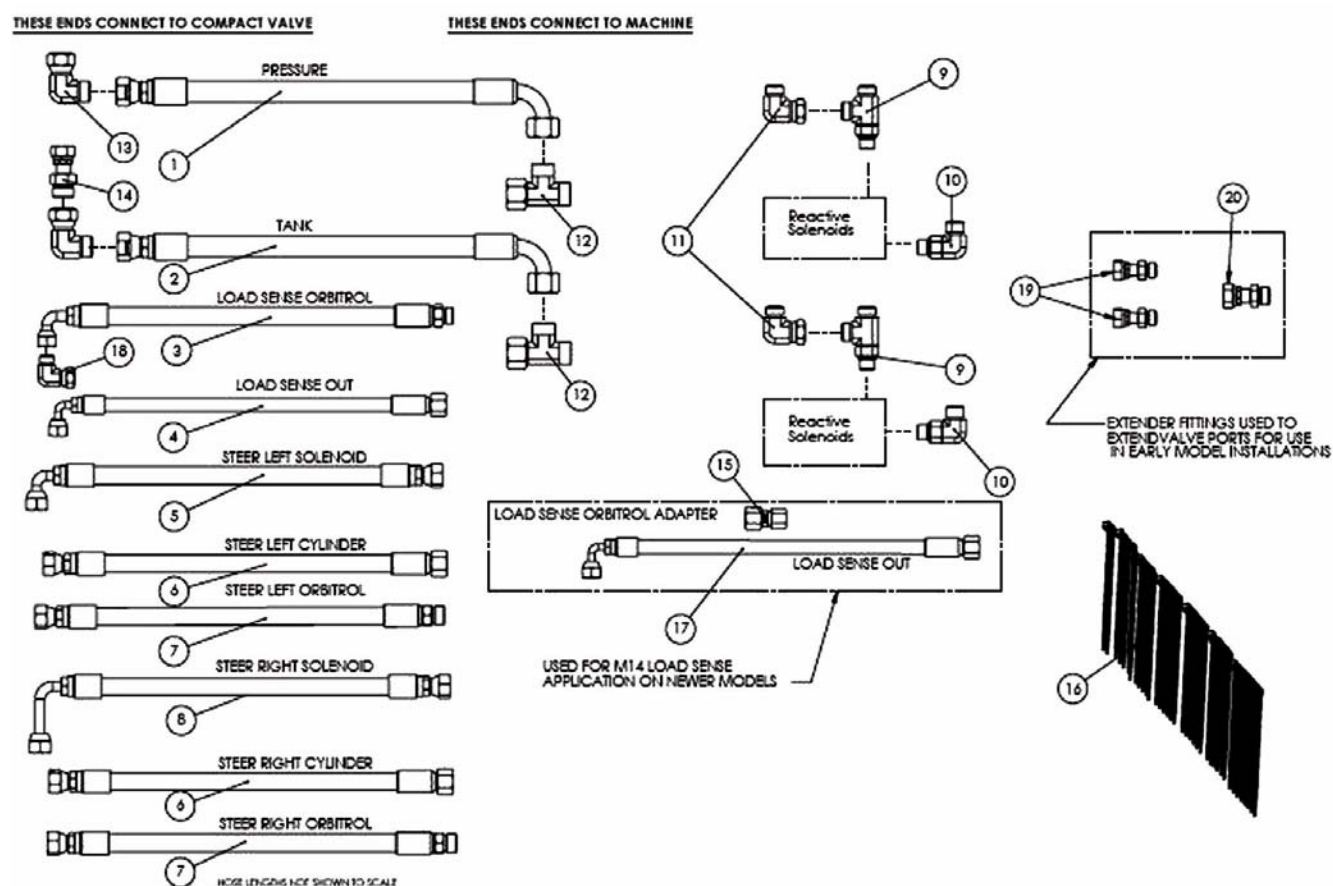


Table 1-3 Hose Kit Components (PN: 500-0380-01)

| Item | Component                | Part Number          |
|------|--------------------------|----------------------|
| 1.   | Hose Assembly 1/2" X 40" | F451TC-JCCF081508-40 |
| 2.   | Hose Assembly 1/2" X 75" | F451TC-JCCF081508-75 |
| 3.   | Hose Assembly 3/8" X 40" | F451TC-J9DO041006-40 |
| 4.   | Hose Assembly 1/4" x 40" | F451TC-J9CA041004-40 |

## Sub-Assemblies

---

| Item | Component  | Part Number          |
|------|--|----------------------|
| 5.   | Hose Assembly 3/8" x 20"                         | F451TC-JCJ9060606-20 |
| 6.   | Hose Assembly 3/8" x 75"                         | F451TC-JCCA061206-75 |
| 7.   | Hose Assembly 3/8" x 75"                         | F451TC-JCDO061206-75 |
| 8.   | Hose Assembly 3/8" x 20"                         | F451TC-JCJ1060606-20 |
| 9.   | Run Tee Adapter -6 ORFS X -6 ORB                 | 6_R5OLO-S            |
| 10.  | Straight Thread Elbow -6M ORFS, 9/16M SAE-ORB    | 6_C5OLO-S            |
| 11.  | Adapter Elbow M6 x F6                            | 6_C6LO-S             |
| 12.  | Run Tee Adapter 15L EO-2 M22 24 DEG.             | EL15ZLCF             |
| 13.  | Elbow Adapter -S-LK, HM, NUT #8                  | 8_C6LO-S             |
| 14.  | Adapter -8M ORFS X -6F ORFS                      | 8-6_LOHL6-S          |
| 15.  | Fitting Tube End Reducer -10L Female to -8L Male | RED10_08ZLCF         |
| 16.  | Cable Ties                                       | 200-0467-01          |
| 17.  | Hose Assembly 1/4" X 40"                         | F451TC-J9CA040804-40 |
| 18.  | Adapter Elbow -4 ORFS                            | 4 C6LO-S             |
| 19.  | Adapter -4M ORFS X -4F ORFS                      | 4 LOHL6-S            |
| 20.  | Adapter -6M ORFS X -6F ORFS                      | 6 LOHL6-S            |



## Bracket Kit Components

Figure 1-4 Bracket Kit Components (PN: 152-0072-01)

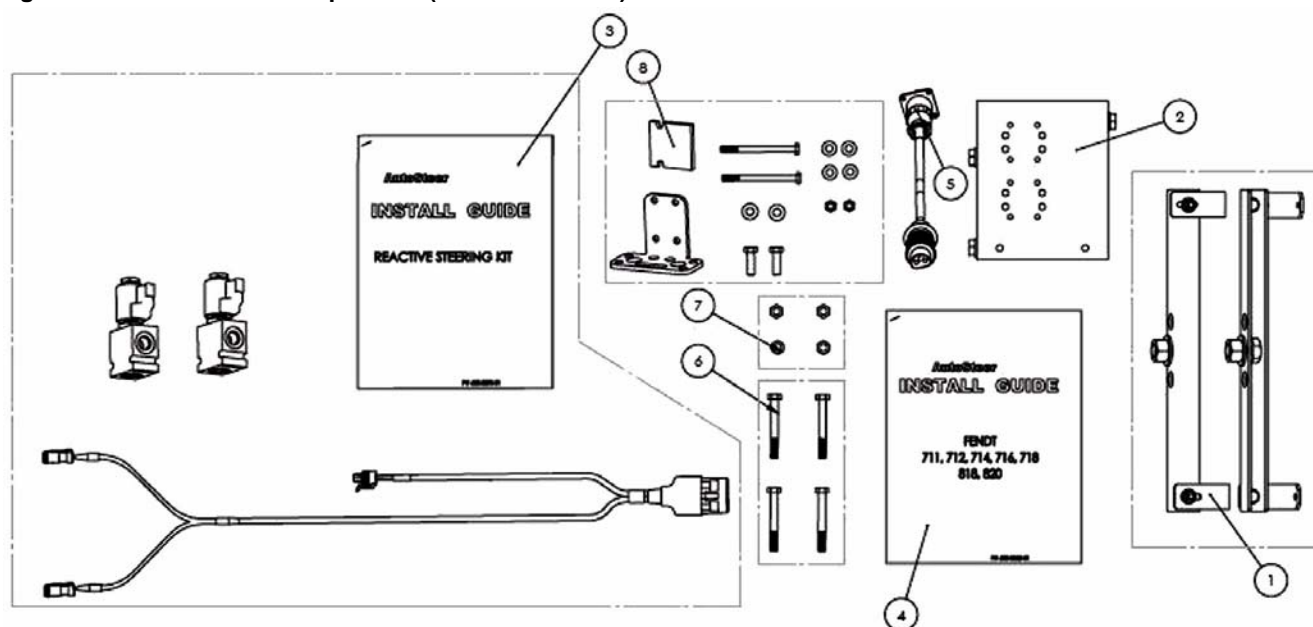


Table 1-4 Bracket Kit Components (PN: 152-0072-01)

| Item | Component                              | Part Number |
|------|--|-------------|
| 1.   | Roof Rail Bracket Assembly             | 200-0295-01 |
| 2.   | Monitor Bracket                        | 200-0294-02 |
| 3.   | Reactive Steering Kit                  | 200-0562-01 |
| 4.   | Installation Guide                     | 602-0263-01 |
| 5.   | Power Cable Adapter                    | 201-0234-01 |
| 6.   | Hex Bolts                              | 513-0047-01 |
| 7.   | Locknuts                               | 519-0006-01 |
| 8.   | Reactive Steering Solenoid Bracket Kit | 200-0564-01 |

## Installation Procedure Outline

---

**Note:** The *Cable Diagram* on page 9 section of this chapter shows the AutoSteer electrical connections.

---

1. Verify that all shipped components have been received.

---

**Note:** Step 2, Step 3, Step 7, Step 8, and Step 9 are skipped if installing an electric steering actuator.

---

2. Install the Wheel Angle Sensor. (Optional).
3. Install the SA Module.
4. Install the Roof Rail on the cab roof.
5. Install the Roof Module on the Roof Rail.
6. Install the Display using a RAM Mount Ball.
7. Install the SA Module Harness.
8. Install the Steering Valve.
9. Install the Hydraulics.
10. Install the Main Cable Harness.
11. Connect the Main Cable Harness to the Display Harness.

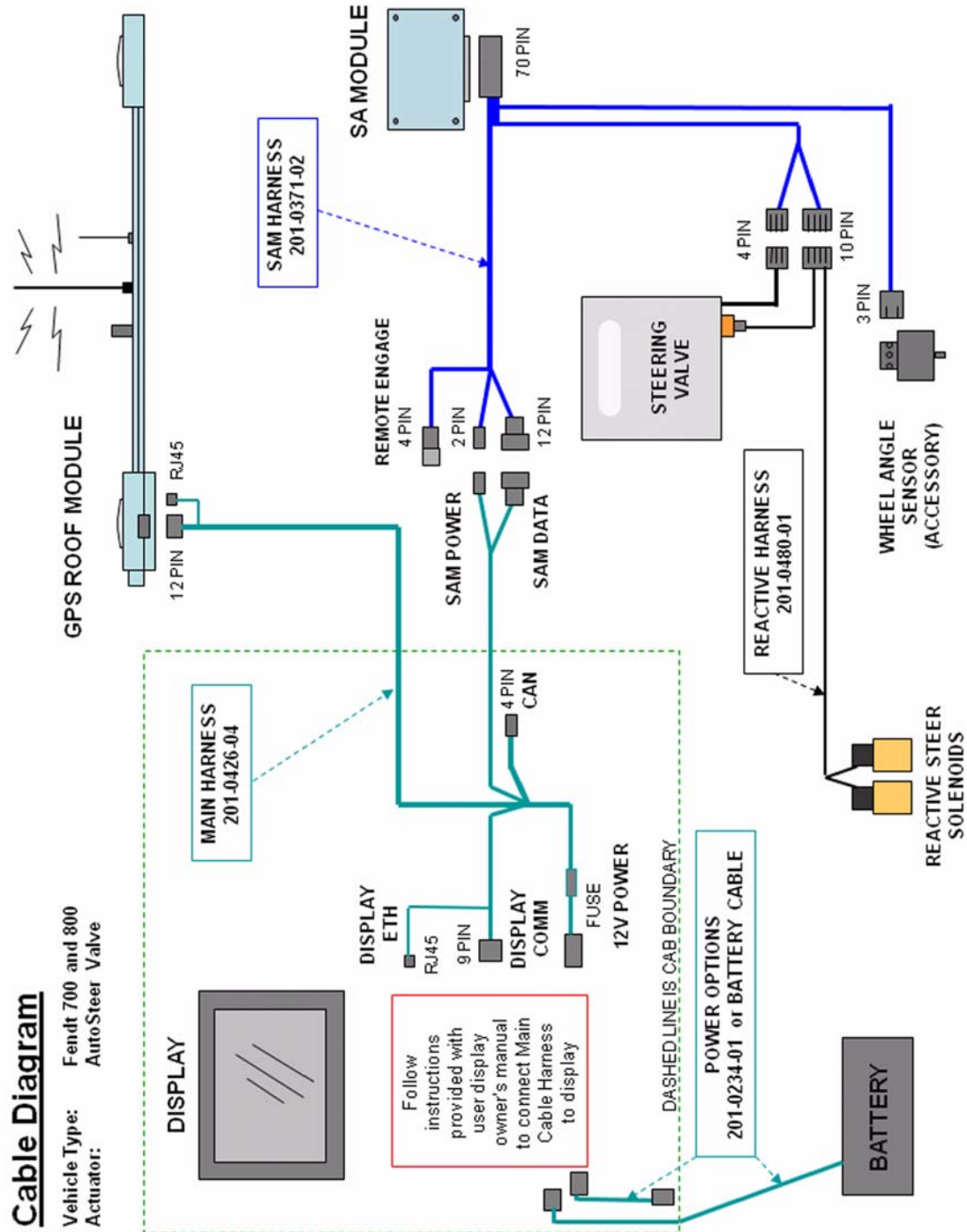
---

**Note:** Instructions for connecting the vehicle kit cables to the Display can be found in the Display user manual.

---

12. Verify that all connectors are properly coupled and secured.
13. Power ON the AutoSteer system.
14. Calibrate the vehicle.
15. Tune the vehicle.
16. Verify the system has been installed properly and operates satisfactorily.

# Cable Diagram





# Steering Valve Installation

---

This **Steering Valve Installation** chapter contains the following sections:

- *Steering Valve Installation Procedure Overview*
- *Steering Valve Configuration*
  - *Steering Valve Configuration Procedure*
- *Steering Valve and Hydraulic Component Installation*
  - *Late Model Valve And Hydraulic Installation*
    - *Steering Valve Installation Checklist*
  - *Early Model Valve And Hydraulic Installation*
    - *Steering Valve Installation Checklist*

# Steering Valve Installation Procedure Overview

---

**Note:** You can use a fiberglass cable puller to make it easier to pull the hydraulic hoses and electrical cables through and around the vehicle.



---

1. Ensure the valve plug and orifice configuration is correct before installing the Steering Valve.
- 

**Note:** See the *Steering Valve Configuration* section for valve plug and orifice configuration information.

---

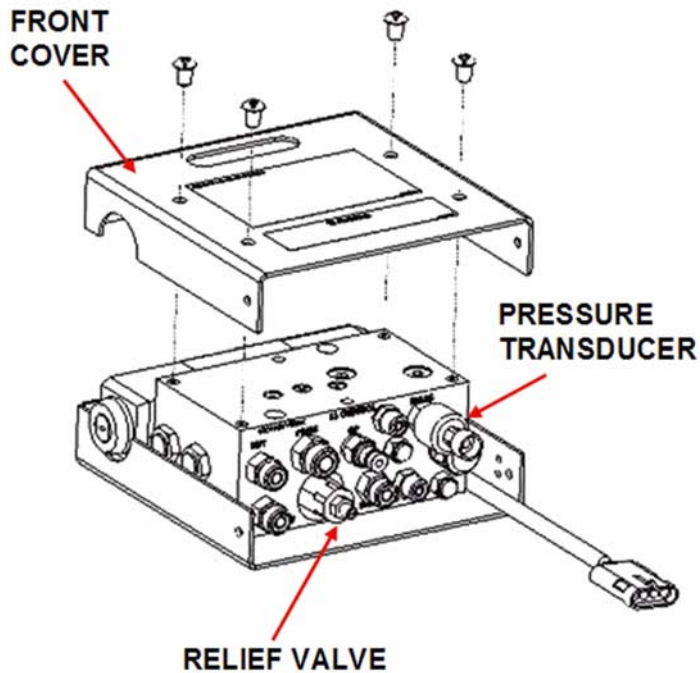
2. Install the Steering Valve bracket and valve on the vehicle.
3. Connect the hoses between the valve and the vehicle steering system.
4. Check for oil leaks.
5. Adjust the AutoSteer pressure relief valve.
6. Perform a functional test to confirm correct valve operation.

|  |   |
|--|---|
|  | <div data-bbox="427 930 1099 1003"> <b>WARNING</b></div> <div data-bbox="427 1003 1099 1173"><p><b>High-Pressure Fluid Hazard</b><br/>Read this manual before installation. Wear hand and eye protection while performing hydraulic system maintenance. Relieve hydraulic system pressure before servicing the hydraulic system.</p></div> |
|--|---|

## Steering Valve Configuration

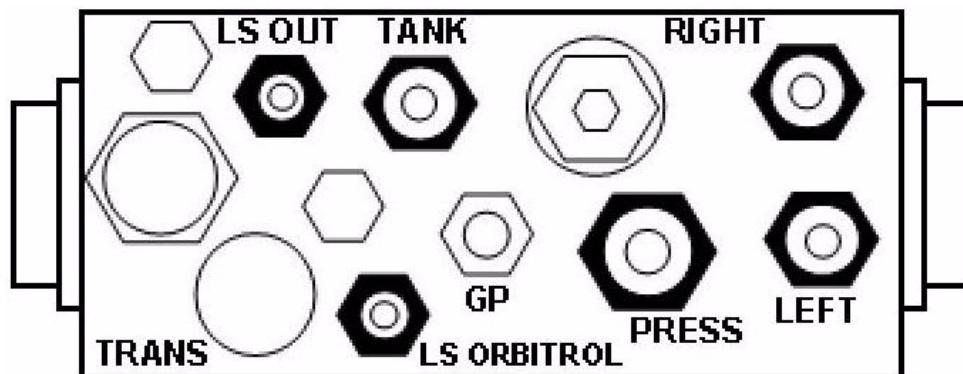
1. Use a 3/16" Allen key to remove the four cover screws. See *Figure 2-1*.
2. Remove the front cover to access the hose connections, pressure transducer and relief valve. See *Figure 2-1*.

**Figure 2-1 Steering Valve Assembly**



**Note:** *Figure 2-2* shows the Steering Valve assembly hydraulic connection functions. *Table 2-1* shows the Steering Valve functions and the fitting size and type.

**Figure 2-2 Steering Valve Port Identification**



**Note:** The ports shown in *Figure 2-2* are upside-down relative to the ports shown in *Figure 2-1*.

---

**Table 2-1 Valve Functions and Fitting Sizes**

| Valve Function                  | Fitting Type/Size |
|---------------------------------|-------------------|
| PRESS = PUMP PRESSURE           | -8 ORFS           |
| TANK = TANK / RETURN            | -6 ORFS           |
| LS ORBITROL = LS FROM ORBITROL  | -4 ORFS           |
| LS OUT = LS (to Priority Valve) | -4 ORFS           |
| LEFT = LEFT STEERING CYLINDER   | -6 ORFS           |
| RIGHT = RIGHT STEERING CYLINDER | -6 ORFS           |
| GP = DIAGNOSTICS PORT           | 1/8" (SAE J1502)  |
| TRANS = PRESSURE TRANSDUCER     | SAE - 4 ORB.      |

## Steering Valve Configuration Procedure

---

**Note:** The Steering Valve has been factory configured for this installation. There are no required plug or orifice changes if the Steering Valve used in this installation is factory new. Skip this procedure if your Steering valve is factory new. However, if you are installing a Steering Valve that had previously been installed on another vehicle, you must verify the plug and orifice configuration is identical to the configuration specified in *Table 2-2*. If you install the Steering Valve with incorrect plug and orifice configuration you can permanently damage the pump and have hydraulic performance issues. When required use the procedure shown below.

---

The location of the three internal plugs and orifices are identified by stamped numbers on the manifold. The vehicles supported in this manual use a closed center Load Sense Orbitrol plug and orifice configuration.

---

**Note:** When required, the internal plugs and orifices are accessed by first removing the larger external plug.

---

**Table 2-2 Plug and Orifice Configuration Summary**

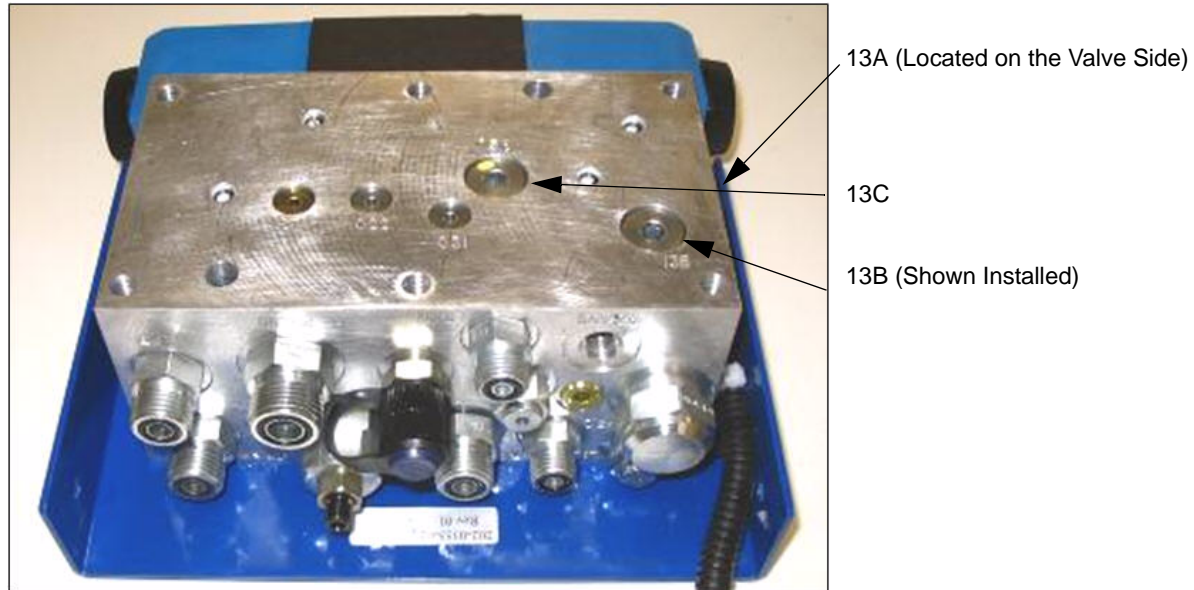
| Type of Installation              | 13A  | 13B  | 13C  |
|-----------------------------------|------|------|------|
| Factory Default Configuration     | Plug | Open | Plug |
| Closed Center Load Sense Orbitrol | Plug | Open | Plug |



**Note:** Do not install this valve on other vehicles without the appropriate installation manual. Incorrect valve configuration and wrong hose connections can cause immediate and severe pump damage.

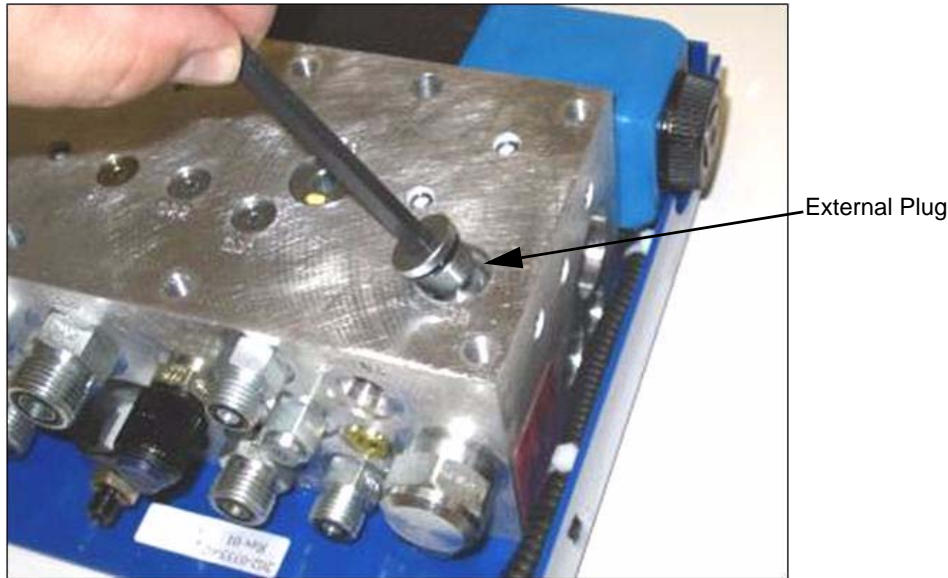
1. Remove the front valve cover using a 3/16" hex key to loosen the four screws.
2. Identify the three threaded plugs. See *Figure 2-3*.

**Figure 2-3 Steering Valve With Cover Removed**



3. Identify the large external access plug identified in position **13B**. See *Figure 2-4*.
4. Remove the external plug in position **13B** using a 1/4" hex key. See *Figure 2-4*.

**Figure 2-4 Removing External Plug**



5. Confirm there is no internal plug installed in position **13B**.
6. If present, remove the internal plug in the **13B** position using a 1/8" hex key.
7. Re-install the large external plug in position **13B**.
8. This concludes the plug and orifice verification/configuration. The valve is now ready for vehicle installation.

## Steering Valve and Hydraulic Component Installation

There are two procedures for installing the steering valve and connecting the hydraulic hoses on these vehicle series. These procedures are based upon the vehicle age. Whether the vehicle is a late model or early model determines which procedure you should use.

**Note:** See *Figure 2-5* and *Figure 2-6* to identify your vehicle model.

---

**Figure 2-5 Late Model Step Configuration**



**Figure 2-6 Early Model Step Configuration**



## *Late Model Valve And Hydraulic Installation*

1. Locate the step on the vehicle right-hand side. See *Figure 2-7*.

---

**Note:** If your right-hand step looks different than *Figure 2-7*, you have an early model vehicle. See the *Early Model Valve And Hydraulic Installation* section on *page 44* of this manual for your installation procedure.

---

---

**Note:** The following steps show how to remove the step top panel to enable access for valve mounting and hydraulic installation.

---

**Figure 2-7 Locating Vehicle Steps**



2. Remove the three bolts and nuts using a 13mm socket and ratchet as shown in *Figure 2-8*.

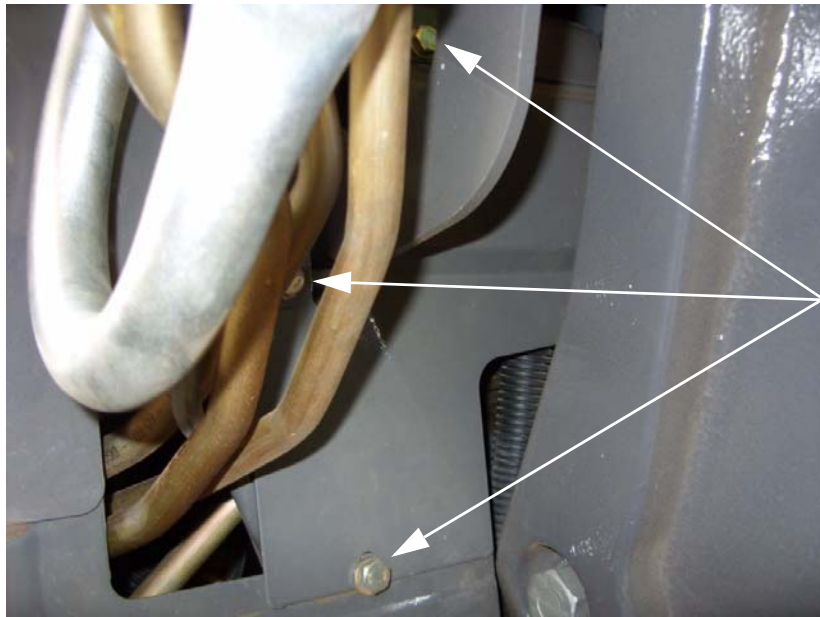
**Figure 2-8 Bolt Removal**



Remove These Bolts

3. Remove the three bolts shown using a 13mm socket and ratchet. See *Figure 2-9*.

**Figure 2-9 Loader Cover Plate Removal**



Remove These Bolts



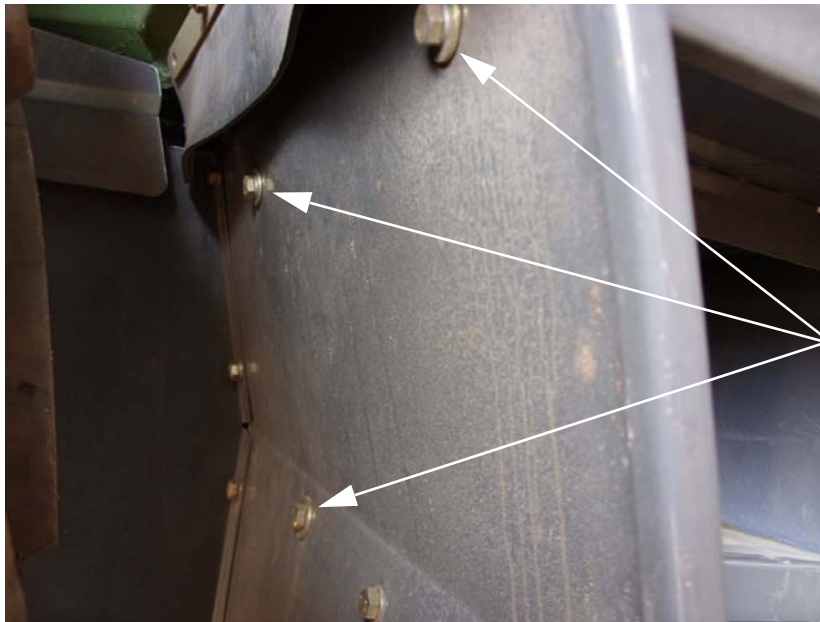
4. Remove the plate from area as shown in *Figure 2-10*.

**Figure 2-10 Remove Plate**



5. Remove the three bolts using a 13mm socket and ratchet as shown in *Figure 2-11*.

**Figure 2-11 Removing Step Rear Bolts**



6. Turn toolbox lock counterclockwise to unlock it. See *Figure 2-12*.
7. Remove the tool box by pulling it out completely.

**Figure 2-12 Tool Box Lock**



Toolbox Lock

8. Remove the three bolts and nuts using a 13mm socket, ratchet and wrench as shown in *Figure 2-13*.

**Figure 2-13 Battery Compartment Bolts**



Remove These Bolts

9. Remove the bolt and nut using a 13mm socket and ratchet and wrench as shown in *Figure 2-14*.

**Figure 2-14 Removing the Tool Box Tray Bolt**



10. Remove the bolt using a 17mm socket and ratchet as shown in *Figure 2-15*.

**Figure 2-15 Step Bolt Removal**





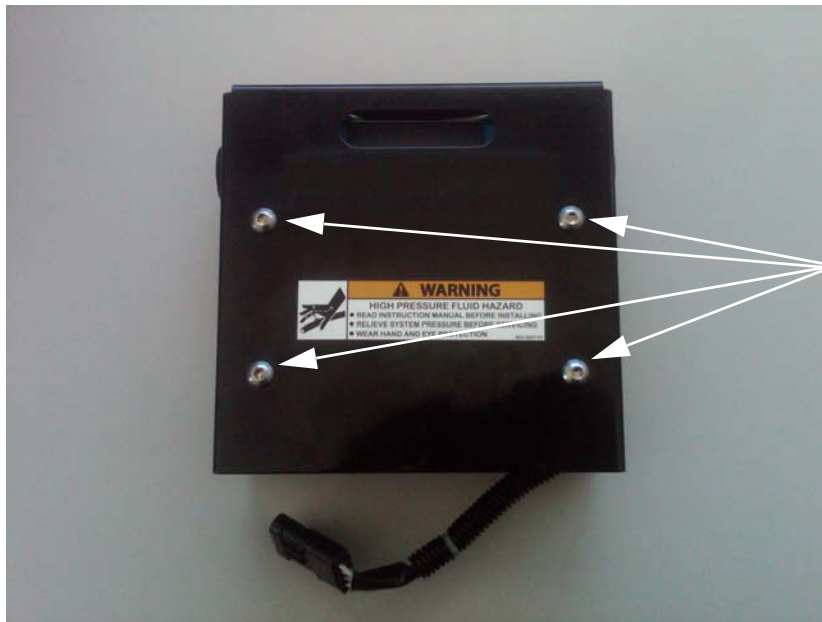
11. Remove the panel by sliding it away from the vehicle. See *Figure 2-16*.

**Figure 2-16 Panel Removed**



12. Remove valve front cover by removing the bolts using a 3/16" Allen wrench. See *Figure 2-17*.

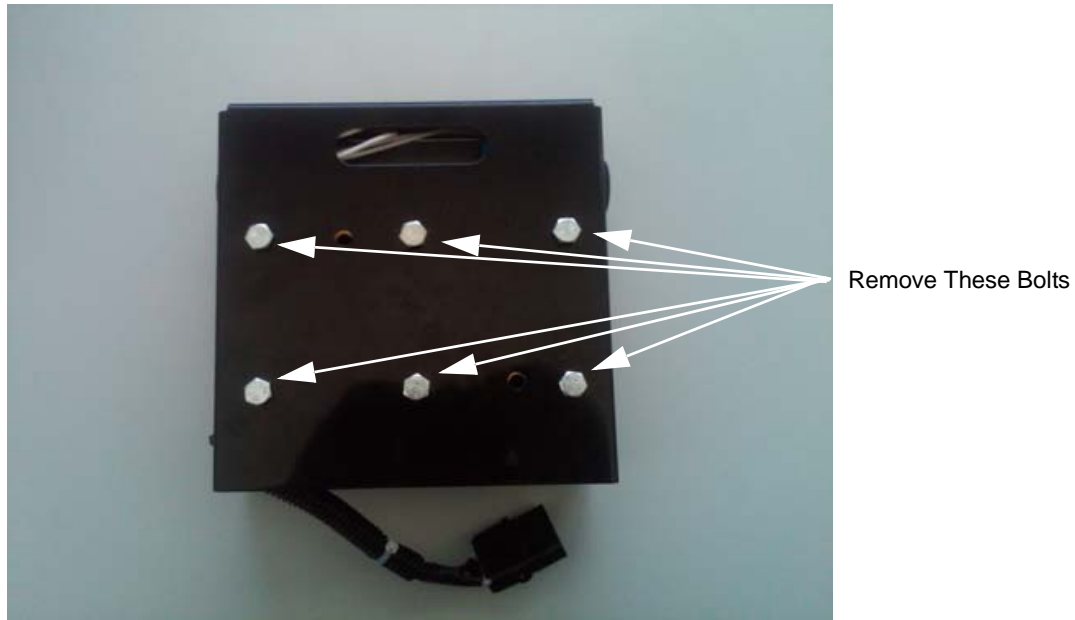
**Figure 2-17 Front Cover Bolts**



Remove These Bolts

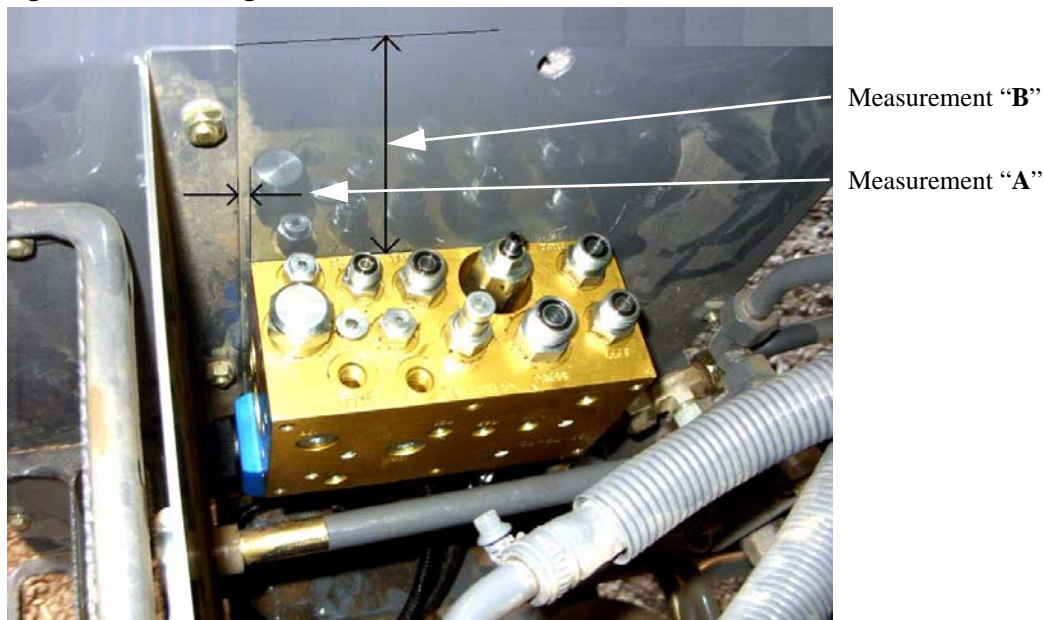
13. Remove the valve rear cover by removing the bolts using a 1/2" wrench. See *Figure 2-18*.

**Figure 2-18 Removing Valve Rear Panel**



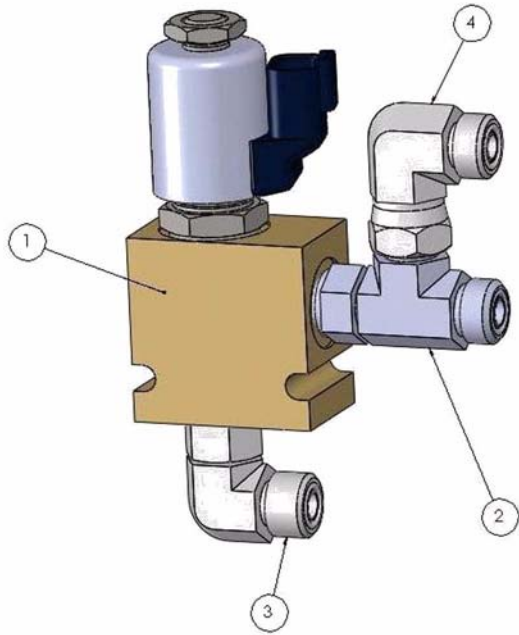
14. Hold the valve block in position shown. **A** = 5mm    **B** = 130mm
15. Mark holes indicated on the valve using a long thin scribe or other marker.
16. Remove valve block and drill holes using a 9mm drill bit and drill.
17. Secure valve the vehicle using the two hex socket bolts, washers and nuts supplied in the valve kit.

**Figure 2-19 Mounting the Valve**



18. Assemble the reactive solenoids as shown in *Figure 2-20* and described in *Table 2-3*.

**Figure 2-20 Assembled Reactive Solenoid**

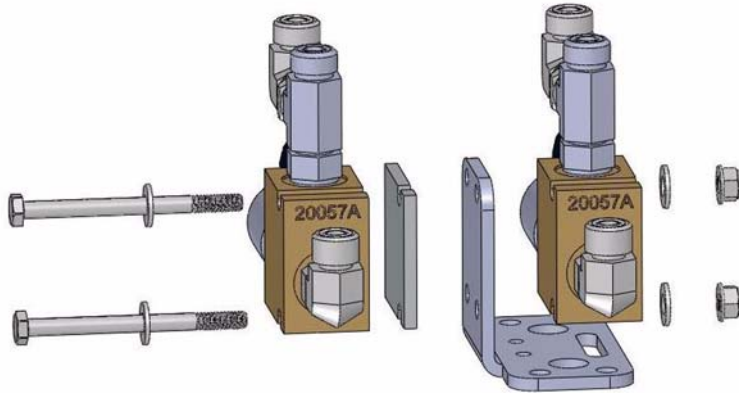


**Table 2-3 Solenoid Assembly Components**

| Item | Description                                    |
|------|--|
| 1    | Solenoid Assembly 12V NRML OPEN                |
| 2    | Run Tee Adapter -6 ORFS X -6 ORB               |
| 3    | Straight Thread Elbow -6M ORFS, 9/16 M SAE-ORB |
| 4    | Elbow Adapter 6M x 6F                          |

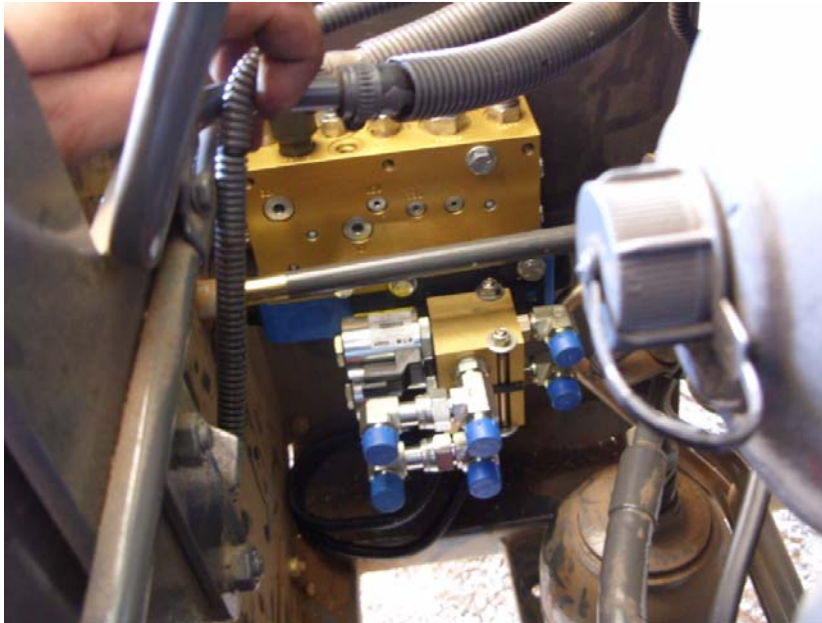
19. Mount the reactive solenoids to the bracket using 1/4 inch x 3 1/4 inch UNC bolts, nuts and washers supplied in the kit. See *Figure 2-21*.
20. Tighten the bolts using two 7/16" wrenches.

**Figure 2-21 Assembling the Solenoids to the Bracket**



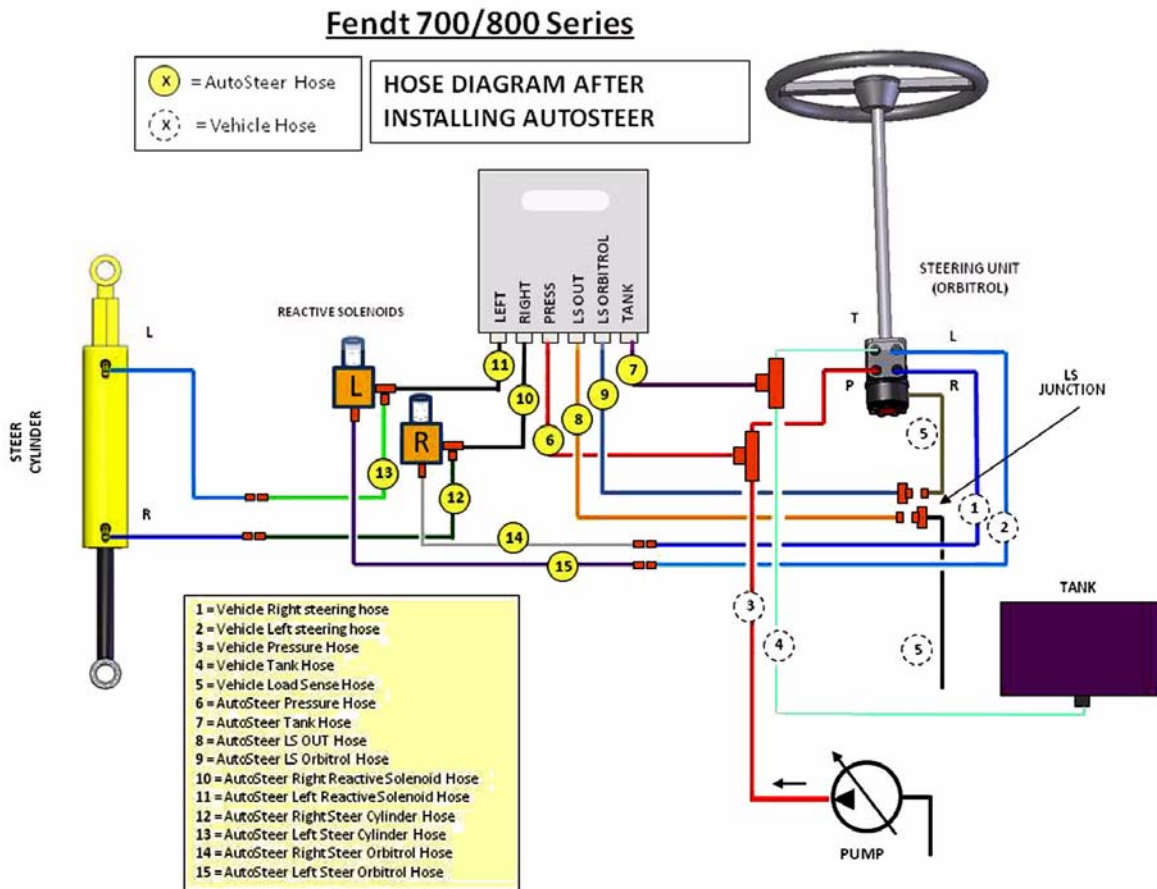
21. Mount the solenoid assembly to the valve using the two provided bolts and washers. See *Figure 2-22*.
22. Tighten the bolts with a 13mm socket and ratchet. See *Figure 2-22*.

**Figure 2-22 Solenoid Assembly Mounted on the Steering Valve**



23. Figure 2-23 shows the completed hydraulic connections diagram.

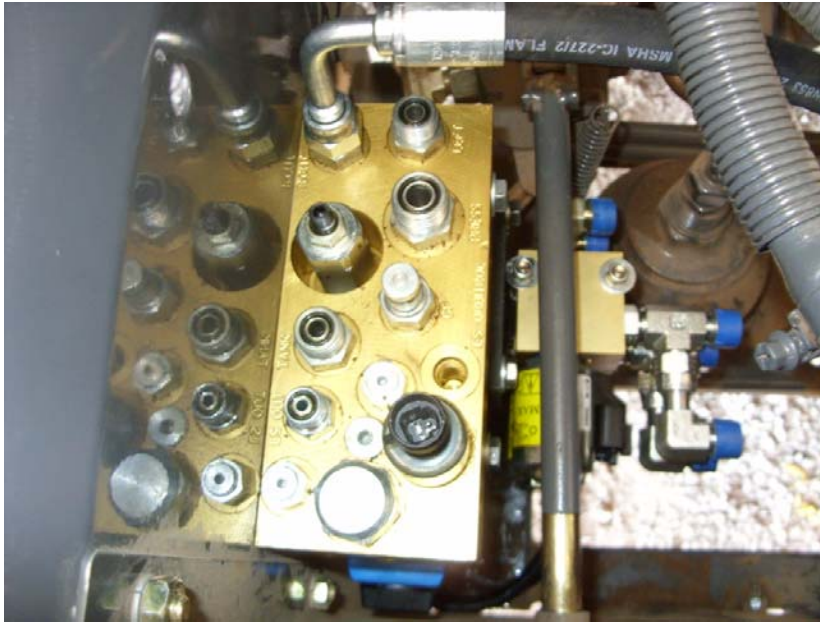
Figure 2-23 Hydraulic Diagram





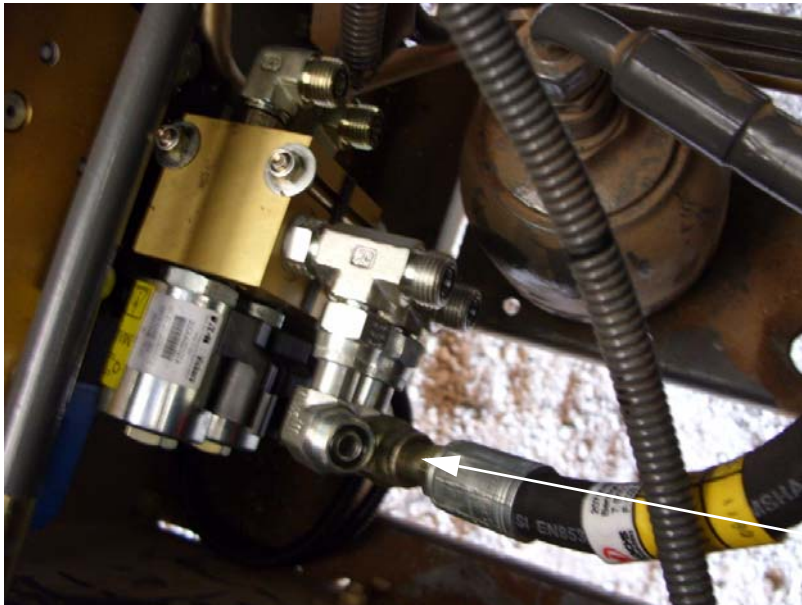
24. Connect the Right Steer Hose to the steering valve port labeled **Right**. See *Figure 2-24*.

**Figure 2-24 Right Steer Valve Connection**



25. Connect the Right Steer hose opposite end to the bottom reactive solenoid fitting as shown in *Figure 2-25*.

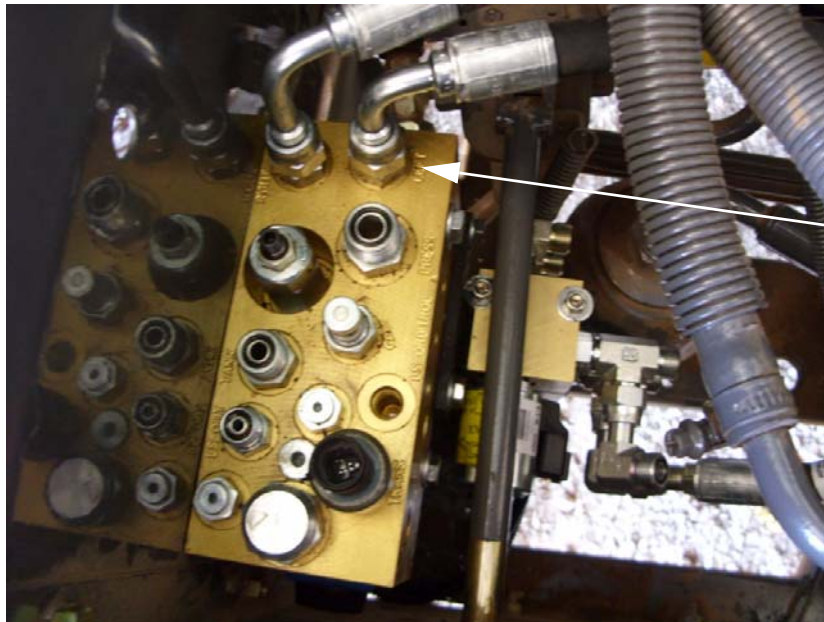
**Figure 2-25 Right Steer Hose Solenoid Connection**



Right Steer Solenoid Connection

26. Connect the Left Steer hose to the steering valve port labeled **Left**. See *Figure 2-26*.

**Figure 2-26 Left Steer Hose Valve Connection**



Left Steer Connection

27. Connect the Left Steer hose opposite end to the bottom reactive solenoid fitting as shown in *Figure 2-27*.

**Figure 2-27 Left Steer Hose Valve Connection**



Left Steer Connection

28. Connect the Right Steer Orbitrol hose to the bottom reactive solenoid as shown in *Figure 2-28*.

**Figure 2-28 Right Steer Orbitrol Valve Hose Connection**



Right Steer Orbitrol Connection



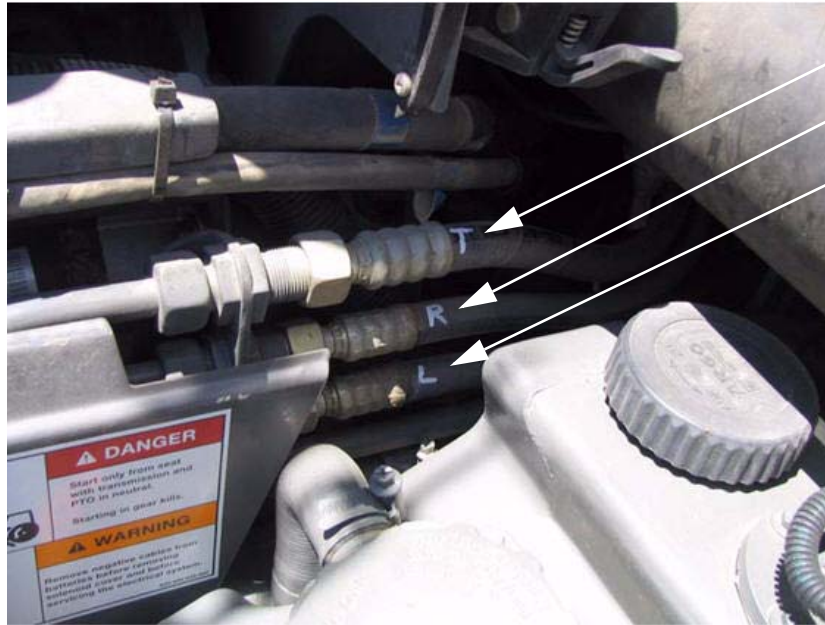
29. Locate the left-hand side hoses just in front of the cab and mark the hoses as shown in *Figure 2-29*.

---

**Note:**

- The top hose is the Tank hose mark it "T".
  - The middle hose is the Right Steer hose mark it "R".
  - The bottom hose is the Left Steer hose mark it "L".
- 

**Figure 2-29 Vehicle Hydraulic Line Identification**



Tank Line  
Right Steer Line  
Left Steer Line

30. Move the hose to make the installation easier as shown in *Figure 2-30*.

---

**Note:** To move the hose, loosen the clamp using a Phillips screw driver. Next, pull off the hose as shown in *Figure 2-30*.

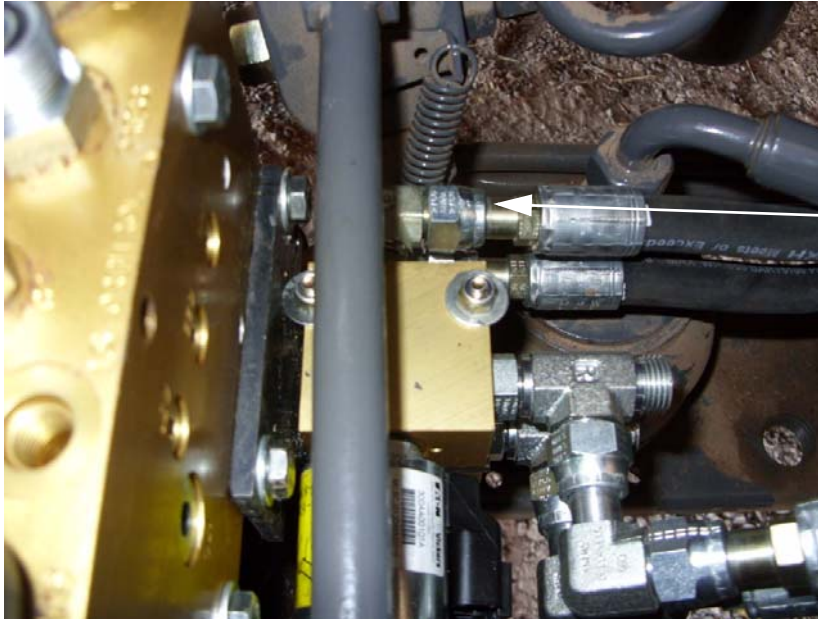
---

**Figure 2-30 Remove Hose For Access**



31. Disconnect the middle hose marked with an "R".
32. Connect the Steer Right Orbitrol opposite hose end to the opposite end of the previously disconnected "R" hose.
33. Connect the Steer Left Orbitrol hose to the top reactive solenoid as shown in *Figure 2-31*.

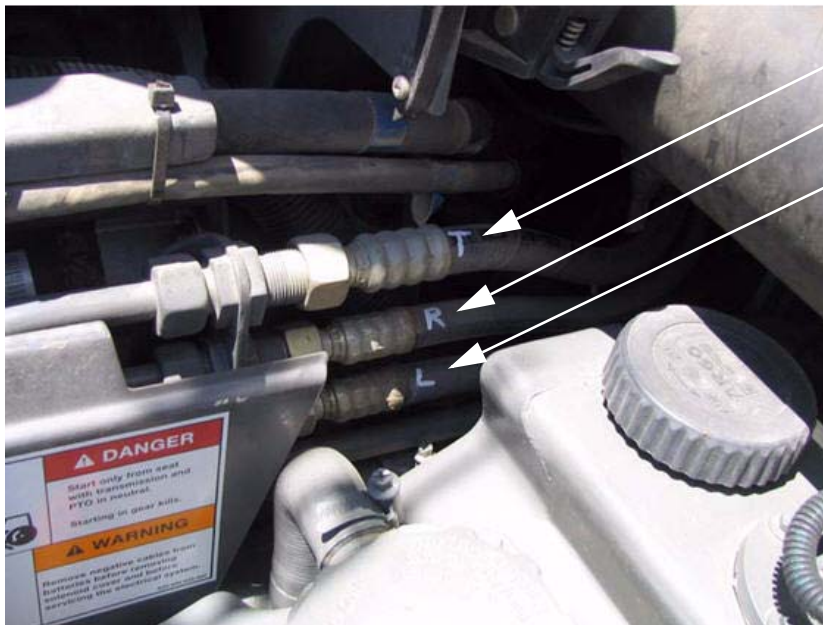
**Figure 2-31 Steer Left Orbitrol Hose Connection To Top Reactive Solenoid**



Left Steer Orbitrol Hose Connection

34. Route the hose opposite end under the cab to the engine left side.
35. Disconnect the bottom hose marked with an "L". See *Figure 2-32*.

**Figure 2-32 Vehicle Hydraulic Line Identification**



Tank Line  
Right Steer Line  
Left Steer Line

36. Connect the Steer Left Orbitrol hose opposite end to opposite end of the previously disconnected hose Marked "L"

37. Connect the Steer Right Cylinder hose to the bottom reactive solenoid fitting as shown in *Figure 2-33*.

**Figure 2-33 Right Steer Hose Connection to Reactive Solenoid**



Right Steer Hose Connection

38. Route the hose opposite end under the cab to the engine left side.

39. Connect the Steer Right Cylinder hose opposite end to the previously disconnected "R" hose fitting. See *Figure 2-34*.

**Figure 2-34 Steer Right Hose Connection**



Steer Right Hose Connection



40. Connect the "Steer Left Cylinder" hose to the Top reactive solenoid as shown in *Figure 2-35*.

**Figure 2-35 Left Steer Connection**



Left Steer Connection

41. Route the hose opposite end under the cab to the engine left side.
42. Connect the Steer Left Cylinder hose opposite end to the fitting where the hose marked "L" was disconnected. See *Figure 2-36*.

**Figure 2-36 Left Steer Hose Connection**



Left Steer Hose Connection

43. Install the Elbow adapter to the steering valve pressure port labelled **PRESS**. See *Figure 2-37*.

**Figure 2-37 Elbow Adapter on Pressure Port**



Elbow Adapter

44. Connect Pressure Hose to the Pressure Port elbow adapter. See *Figure 2-38*.

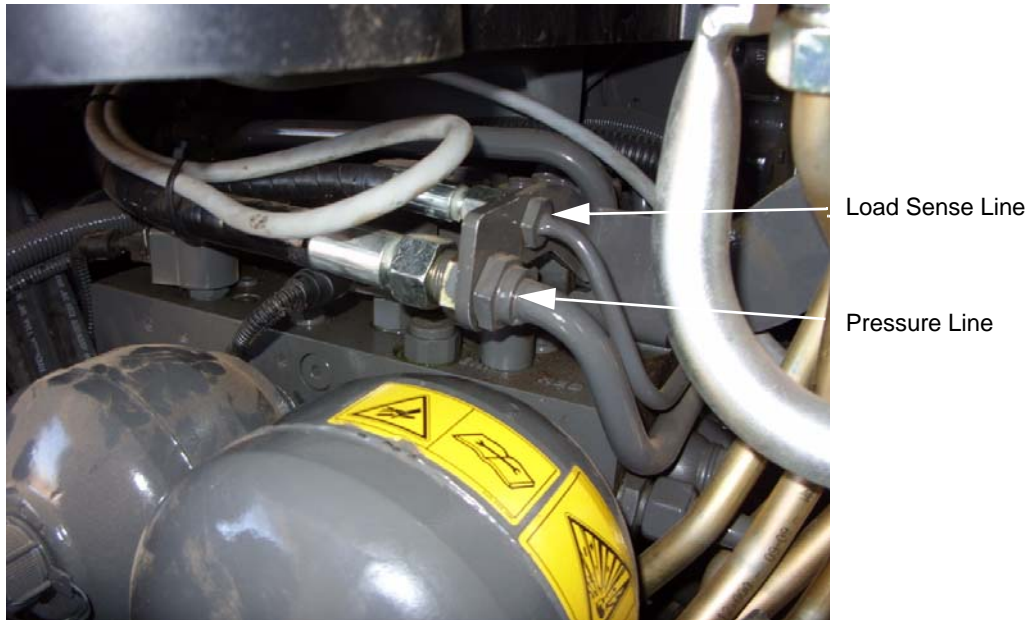
**Figure 2-38 Pressure Hose Connected to Pressure Port Adapter**



Pressure Hose Connected

45. Locate the vehicle Pressure and Load Sense hydraulic lines. See *Figure 2-39*.

**Figure 2-39 Pressure and Load Sense Hydraulic Lines**



46. Insert a run tee into the Pressure line as shown in *Figure 2-40*.

**Figure 2-40 Pressure Line Run Tee**





47. Connect the Pressure hose opposite end to the vehicle pressure line run tee. See *Figure 2-41*.

**Figure 2-41 Pressure Hose Connection to Run Tee**



Pressure Hose Connection

48. Connect an expander/extender and elbow fitting the steering valve Tank port labelled **TANK** as shown in *Figure 2-42*.

**Figure 2-42 Tank Port Extension and Elbow Connection**



Extender and Elbow



49. Connect the Tank Hose to the Tank port elbow. See *Figure 2-43*.

**Figure 2-43 Tank Hose Connection**



Tank Hose Connection

50. Route the Tank hose opposite end under the cab to the engine left side.

51. Disconnect the Tank line marked "T" on the engine left side. See *Figure 2-44*.

**Figure 2-44 Tank Hose Disconnected**



Tank Hose Disconnected

52. Install a run tee on to the end of the hose marked "T". See *Figure 2-45*.
53. Connect the Run Tee Opposite end to where the hose was removed. See *Figure 2-45*.
54. Connect the other end of the Tank hose from the valve to the remaining Run Tee fitting as shown in *Figure 2-45*.
55. Replace hose removed earlier to aid installation and tighten clamp using a phillips head screw driver.

**Figure 2-45 Tank Line Run Tee Connection**



Tank Line Run Tee Connections

Replaced Hose

56. Connect LS Orbitrol hose to the steering valve LS orbitrol port labelled **LS ORBITROL**. See *Figure 2-46*.

**Figure 2-46 Load Sense Orbitrol Connection**

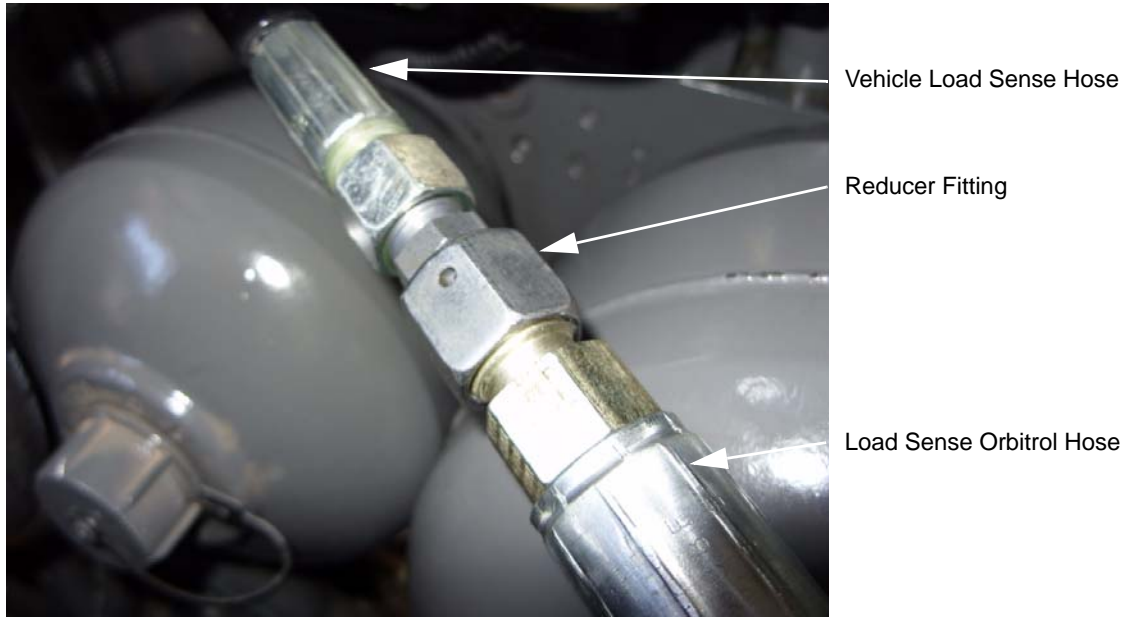


Load Sense Orbitrol Connection

57. Disconnect vehicle Load Sense hose. See *Figure 2-47*.

58. Connect vehicle Load Sense hose to the LS Orbitrol hose using a reducer. See *Figure 2-47*.

**Figure 2-47 Vehicle Load Sense to Load Sense Orbitrol Connection**



59. Connect the LS Out hose to the steering valve LS Out port labelled **LS OUT** using an elbow as shown in *Figure 2-48*.

**Figure 2-48 Load Sense Out Port Connection**





**Note:** There are two different LS OUT hoses in the installation kit. Later models use the hose with an M14 fitting. Earlier Models use the hose with an M16 fitting.

---

60. Connect the LS OUT hose opposite end to the location where the vehicle LS hose was previously disconnected. See *Figure 2-49*.

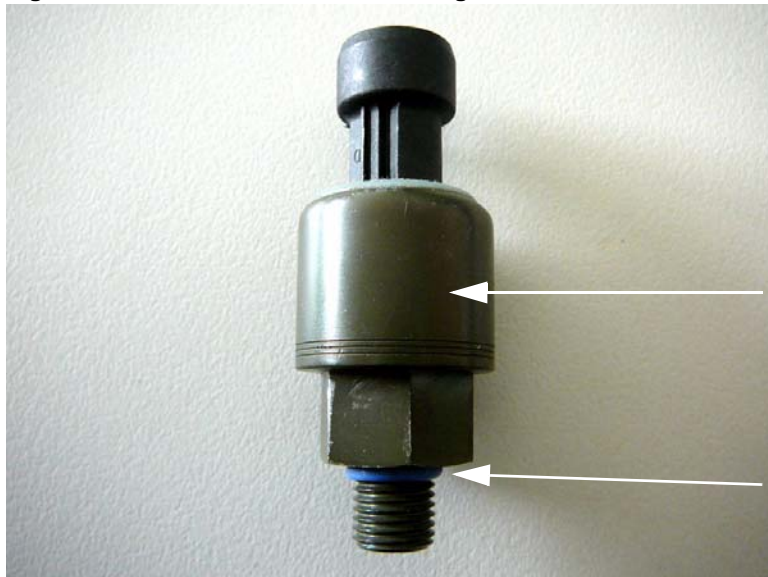
**Figure 2-49 Connection to Vehicle Load Sense**



Load Sense Connection

61. Locate the Pressure Transducer. Ensure the O-ring is properly fitted. See *Figure 2-50*

**Figure 2-50 Pressure Transducer O-ring**



Pressure Transducer

O-ring

62. Install the threaded Pressure Transducer into the steering valve **TRANS** port. See *Figure 2-51*

**Figure 2-51 Pressure Transducer Installed**



Pressure Transducer

63. Tighten the pressure transducer using a 3/4 inch wrench.
64. The steering valve is now installed.

---

**Note:** The two removed valve covers are not required for this installation and do not need to be installed.

---

## Steering Valve Installation Checklist

1. Ensure the Reactive Solenoid bracket is tight.
2. Ensure the Steering valve mounting screws are tight.
3. Ensure the Pressure hose is connected to the correct port on Steering Valve and vehicle Pressure line.
4. Ensure the Tank hose is connected to the correct port on Steering Valve and existing vehicle Return line.
5. Ensure the LS-OUT hose is connected to correct port on Steering Valve and vehicle LS port.
6. Ensure the LS ORBITROL hose is connected to correct ports at both ends.
7. Ensure the Right Reactive Solenoid, Right Cylinder and Right Orbitrol hoses are connected correctly at both ends.
8. Ensure the Left Reactive Solenoid, Left Cylinder and Left Orbitrol hoses are connected correctly at both ends.
9. Ensure the Pressure transducer is installed and tight.
10. Ensure All hydraulic hose fittings are tight.
11. Ensure there is protected Hose routing and there are cable ties on all hoses.

## *Early Model Valve And Hydraulic Installation*

1. Locate the step on the vehicle right-hand side.

---

**Note:** If your right-hand step does not look like *Figure 2-52* then you need to use the *Late Model Valve And Hydraulic Installation* procedure on *page 18* of this manual.

---

**Figure 2-52 Early Model Right Side Steps**



2. Locate the square bar underneath the vehicle behind the right side steps. See *Figure 2-53*.

**Figure 2-53 Square Bar Location**



3. Clamp the valve brackets to the bar using the M8 x 65mm bolts, washers and nyloc nuts provided. See *Figure 2-54*.

**Figure 2-54 Clamp Bracket Mounted**





4. Remove the six bolts from the valve rear cover using a 1/2" socket and ratchet.
5. Place the valve on the valve bracket and re-insert the valve cover bolts to attach the valve to the bracket. See *Figure 2-55*.

---

**Note:** There are two unused bolts which are required later to mount the reactive solenoid bracket.

---

6. Tighten the bolts using a 1/2" socket and ratchet.

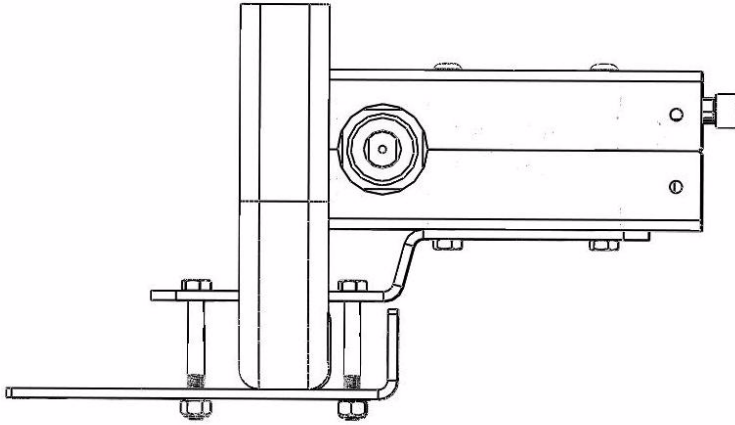
**Figure 2-55 Valve Mounted on Bracket**





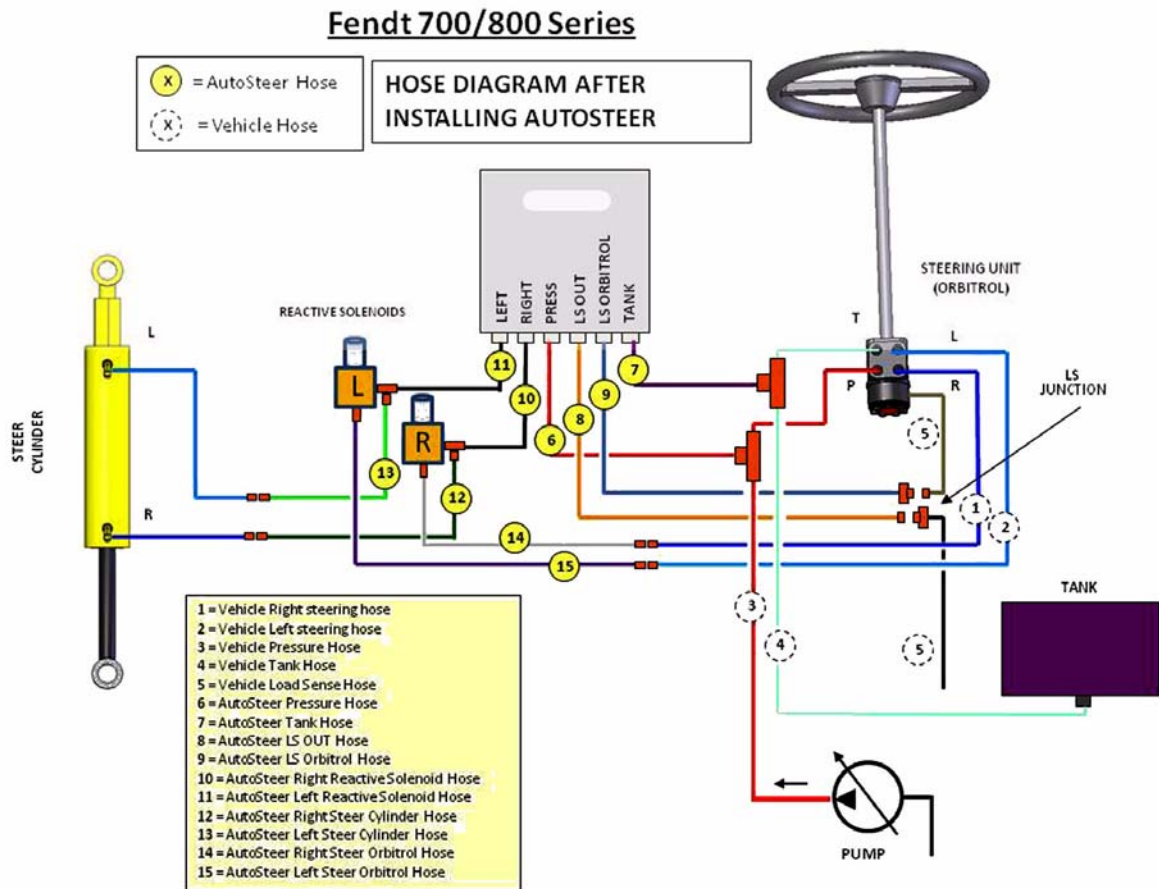
7. The valve is now mounted. See *Figure 2-56*.

**Figure 2-56 Valve Mounted**



8. Figure 2-57 shows the completed hydraulic installation.

Figure 2-57 Hydraulic Diagram



9. Locate the step on the vehicle right-hand side. See *Figure 2-58*.

**Figure 2-58 Early Model Right Side Steps**



10. Remove the four bolts and nuts using a 10mm socket, ratchet and wrench. See *Figure 2-59*.

**Figure 2-59 Panel Bolts**



Remove These Bolts

11. Remove the plate as shown in *Figure 2-60*.

**Figure 2-60 Small Panel Removed**



12. Remove the four bolts and nuts using a 10mm socket, ratchet and wrench as shown in *Figure 2-61*.

**Figure 2-61 Large Panel Bolts**



Remove These Bolts

13. Remove the panel to access the Load Sense and Pressure lines as shown in *Figure 2-62*.

**Figure 2-62 Load Sense and Pressure Lines**





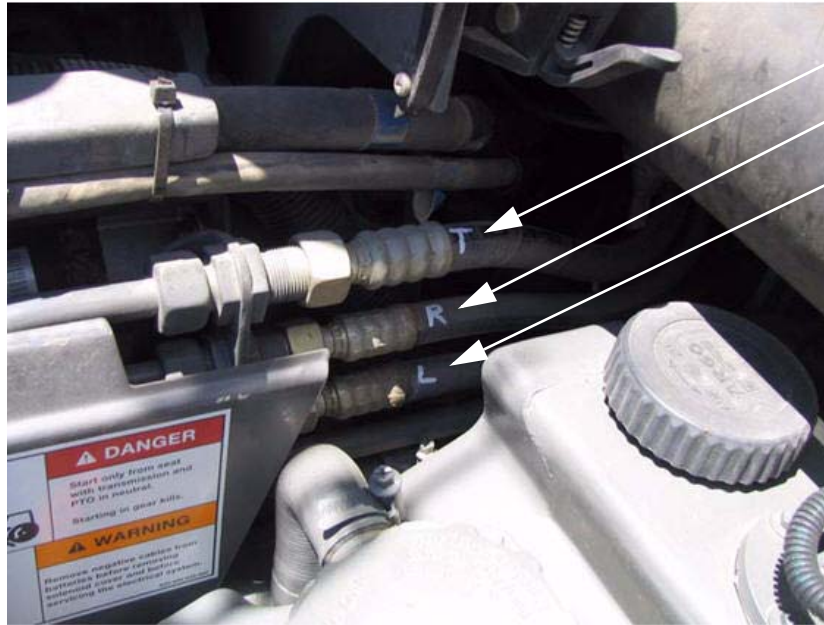
14. Locate the hoses on the left-hand side just in front of the cab and mark the hoses as shown in *Figure 2-63*.

---

**Note:**

- The top hose is the Tank hose mark it "T".
  - The middle hose is the Right Steer hose mark it "R".
  - The bottom hose is the Left Steer hose mark it "L".
- 

**Figure 2-63 Vehicle Hydraulic Line Identification**



Tank Line  
Right Steer Line  
Left Steer Line

15. Move the hose to make the installation easier as shown in *Figure 2-64*.

---

**Note:** To move the hose loosen the clamp using a Phillips screw driver then pulling off the hose as shown in *Figure 2-64*.

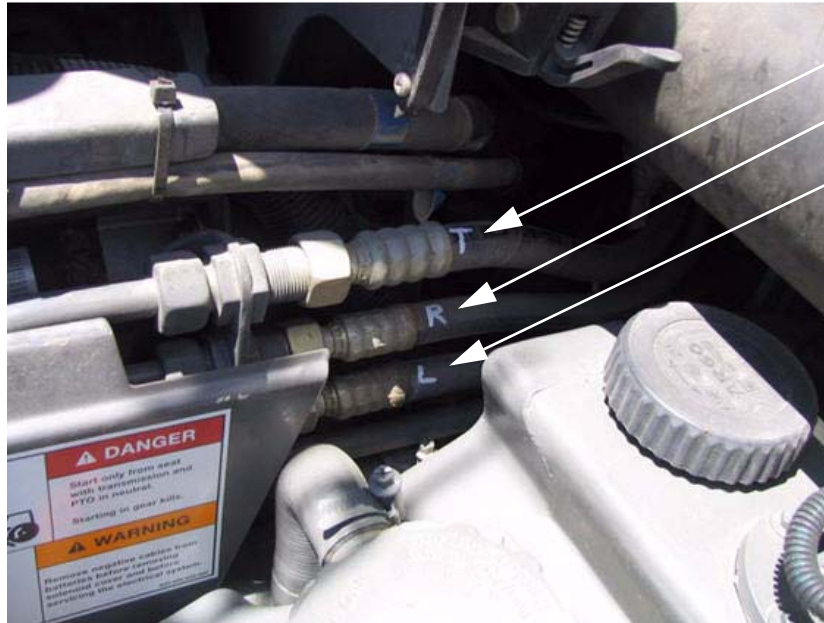
---

**Figure 2-64 Remove Hose For Access**



16. Disconnect the middle hose marked with an "R".
17. Connect the Steer Right Orbitrol hose supplied end to other end of the previously disconnected hose Marked "R".
18. Disconnect the bottom hose marked with an "L". See *Figure 2-65*.

**Figure 2-65 Vehicle Hydraulic Line Identification**



Tank Line  
Right Steer Line  
Left Steer Line



19. Connect the Steer Left Orbitrol hose supplied to the previously disconnected hose Marked "L".
20. Connect the Steer Right Cylinder hose supplied to the fitting where the hose marked "R" was disconnected. See *Figure 2-66*.
21. Connect the Steer Left Cylinder hose supplied to the fitting where the hose marked "L" was disconnected. See *Figure 2-66*.

**Figure 2-66 Steer Right Hose Connection**



Right Steer Hose Connection

Left Steer Hose Connection

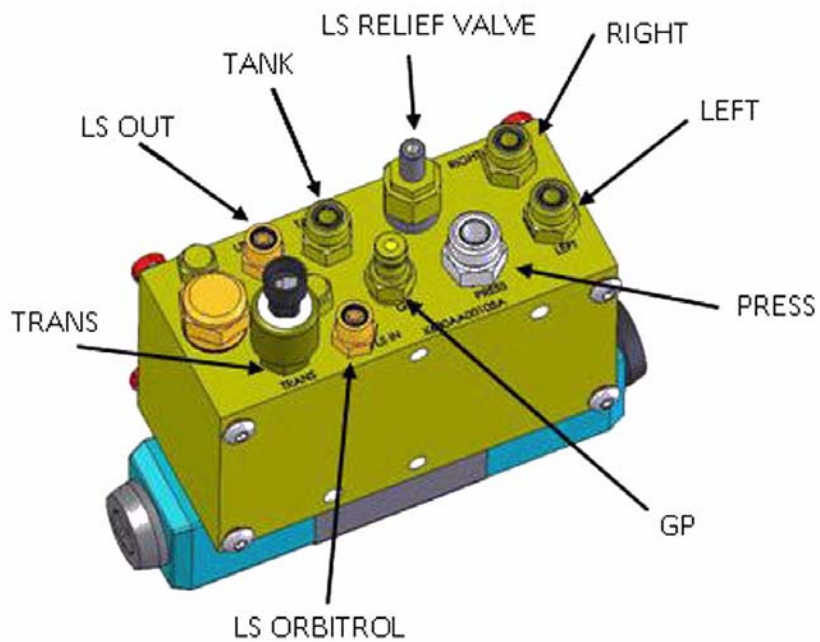
22. Route the previous four connected steer hoses under the cab to the valve behind the right-hand step.
23. Remove the top cover of the steering valve using a 3/16" allen wrench to remove the four retaining bolts.

---

**Note:** *Figure 2-67* shows the valve port connections which are referred to in the following steps.

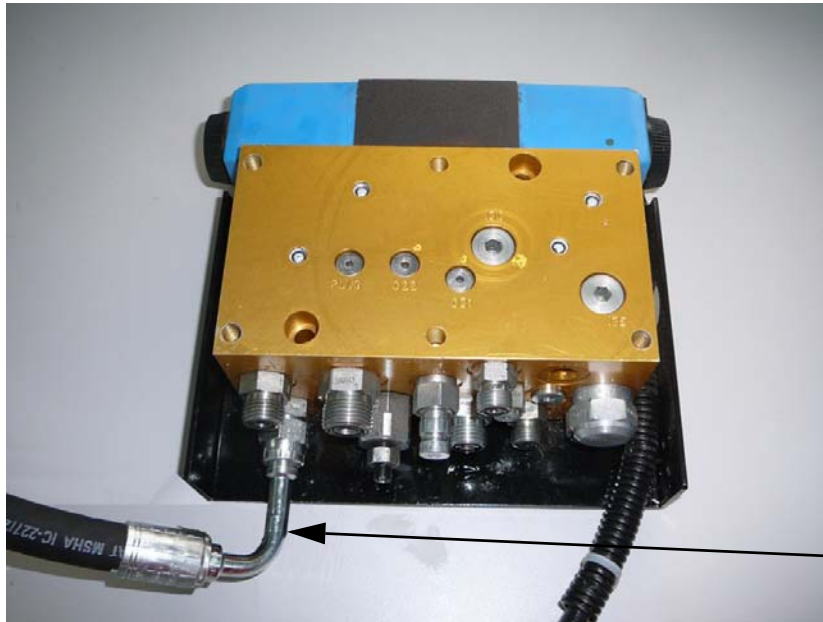
---

**Figure 2-67 Steering Valve Ports**



24. Connect the Right Steer Hose to the valve port labeled RIGHT as shown in *Figure 2-68*.

**Figure 2-68 Right Steer Hose Connected**



Long 90 Degree Hose End

25. Insert and tighten adapters as listed in *Table 2-4*.

---

**Note:** *Figure 2-69* shows the adapters attached to the Steering valve.

---

**Figure 2-69 Steering Valve Port Adapters**



**Table 2-4 Steering Valve Port Adapters**

| Valve Port  | Adapter Type and Size  |
|-------------|--|
| Left        | Extender -6F ORFS to -6M ORFS                                |
| Press       | Elbow -8F ORFS to -8M ORFS                                   |
| Tank        | Expander -6F ORFS to -8M ORFS and Elbow -8F ORFS to -8M ORFS |
| LS Out      | Extender -4F ORFS to -4M ORFS                                |
| LS Orbitrol | Extender -4F ORFS to -4M ORFS                                |

**26.** Connect the Pressure Hose to the Steering valve Pressure Port elbow adapter.

**27.** Locate the vehicle Pressure and Load Sense hydraulic lines. See *Figure 2-70*.

---

**Note:** The Pressure line uses an M22 fitting and the Load Sense line uses an M16 fitting.

---

**Figure 2-70 Pressure and Load Sense Hydraulic Lines**



28. Remove the retaining clamp shown in *Figure 2-71*

**Figure 2-71 Hose Retaining Clamp**



Retaining Clamp

29. Insert an M22 run tee into the Pressure line as shown in *Figure 2-72*.

---

**Note:** The early model Pressure line appearance is different than shown in *Figure 2-72*.

---

**Figure 2-72 Pressure Line Run Tee (Late Model Image)**



Run Tee



**30.** Connect the Pressure hose free end to the vehicle pressure line run tee. See *Figure 2-73*.

---

**Note:** The early model Pressure hose connection appearance is different than shown in *Figure 2-73*.

---

**Figure 2-73 Pressure Hose Connection to Run Tee (Late Model Image)**



Pressure Hose Connection

31. Connect the Tank Hose to the Steering valve TANK port elbow adapter.
32. Route the Tank hose opposite end under the cab to the engine left side.
33. Disconnect the Tank line marked "T" on the engine left side. See *Figure 2-74*.

**Figure 2-74 Tank Hose Disconnected**



Tank Hose Disconnected

34. Install a run tee in the tank line and connect the Tank hose from the Steering valve. See *Figure 2-75*.
35. Replace hose removed earlier to aid installation and tighten clamp using a phillips screw driver.

**Figure 2-75 Tank Line Run Tee Connection**



Tank Line Run Tee Connections

Replaced Hose



36. Connect the supplied LS Orbitrol hose to the Steering valve LS Orbitrol Port labelled **LS ORBITROL** extender fitting.
37. Disconnect vehicle Load Sense hose shown in *Figure 2-76*.

**Figure 2-76 Vehicle LS Hose**



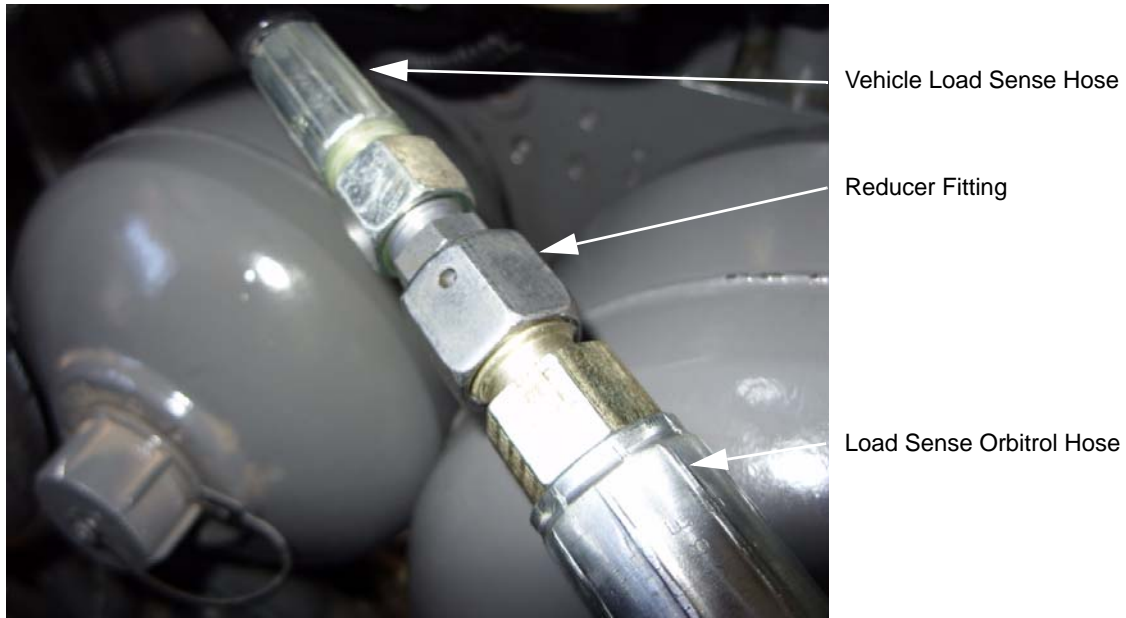
38. Connect vehicle Load Sense hose to the LS Orbitrol hose. See *Figure 2-77*.

---

**Note:** *Figure 2-77* shows a reducer fitting. This fitting is not used for the Load Sense hose to LS Orbitrol hose connection on early models.

---

**Figure 2-77 Vehicle Load Sense to Load Sense Orbitrol Connection**



- 39.** Connect the supplied LS OUT hose to the extender fitting on Steering valve LS Out Port.

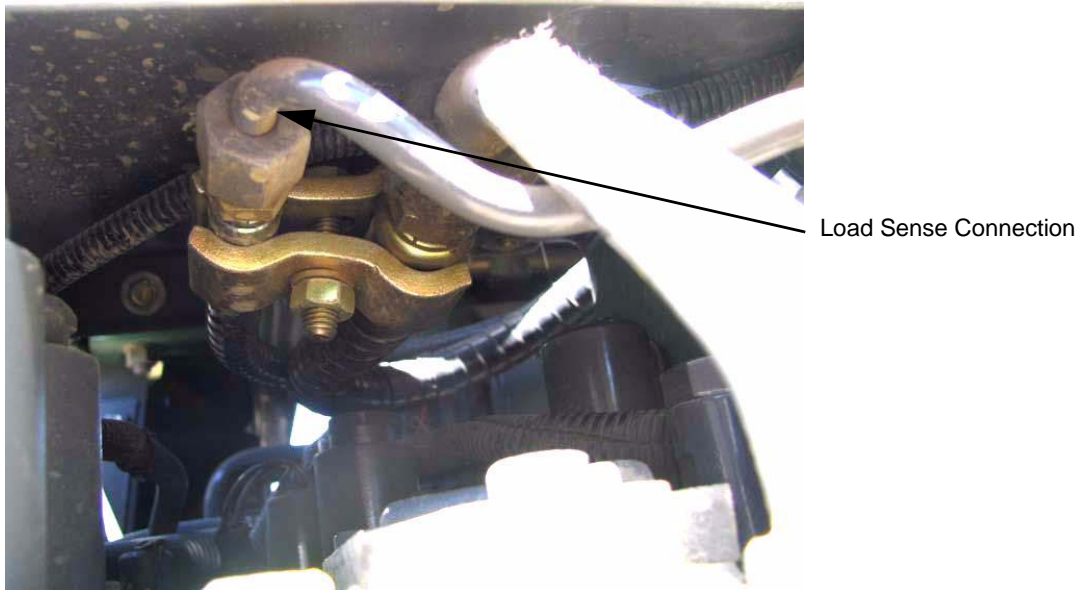
---

**Note:** There are two different LS OUT hoses in the installation kit. Later models use the hose with an M14 fitting. Earlier Models use the hose with an M16 fitting.

---

- 40.** Connect the LS OUT hose opposite end to the steel hose fitting where the vehicle LS hose was previously disconnected. See *Figure 2-78*.

**Figure 2-78** Connection to Vehicle Load Sense



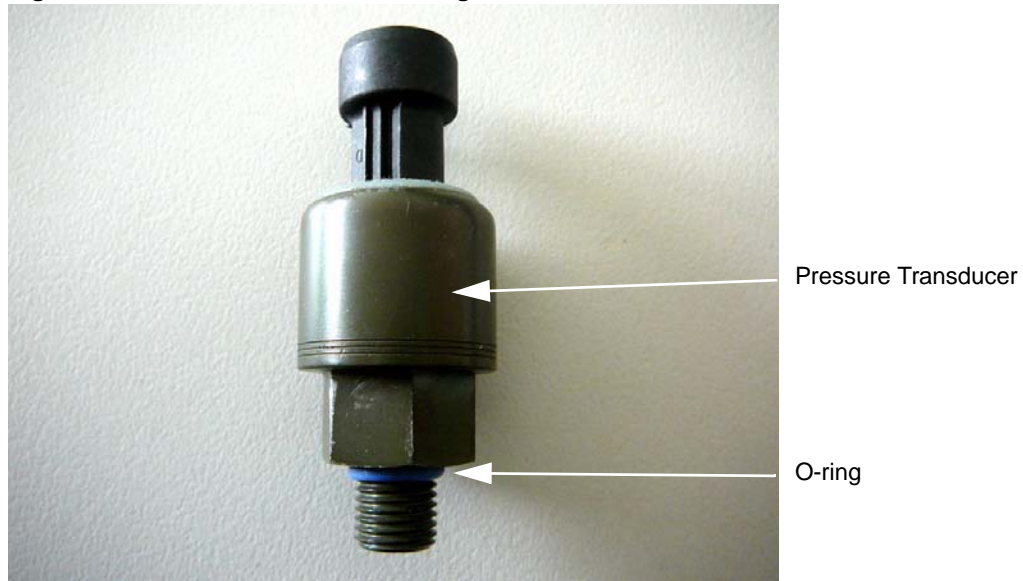
41. Connect the Left Steer Hose to the steering valve Left Port extender fitting.
42. Locate the Pressure Transducer.

---

**Note:** Ensure that the O-ring is fitted. See *Figure 2-79*

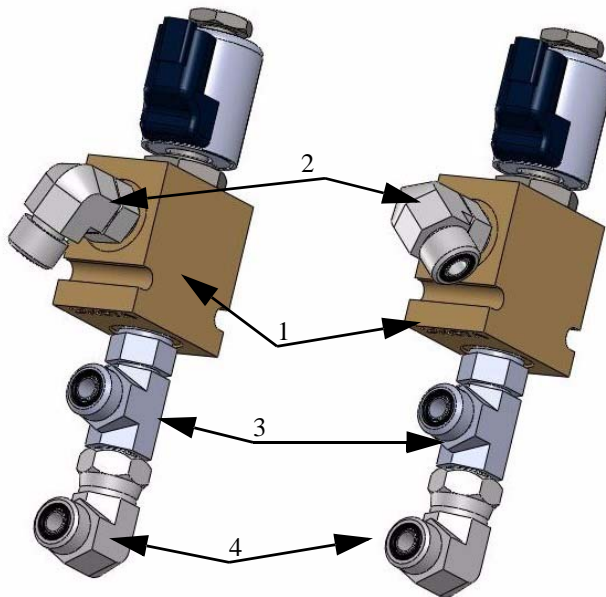
---

**Figure 2-79 Pressure Transducer O-ring**



43. Install the threaded Pressure Transducer into the Steering valve Transducer Port.
44. Tighten the pressure transducer using a 3/4 inch wrench.
45. Assemble the left and right reactive solenoids as shown in *Figure 2-80* and described in *Table 2-5*.

**Figure 2-80 Assembled Reactive Solenoid**



Left Solenoid

Right Solenoid

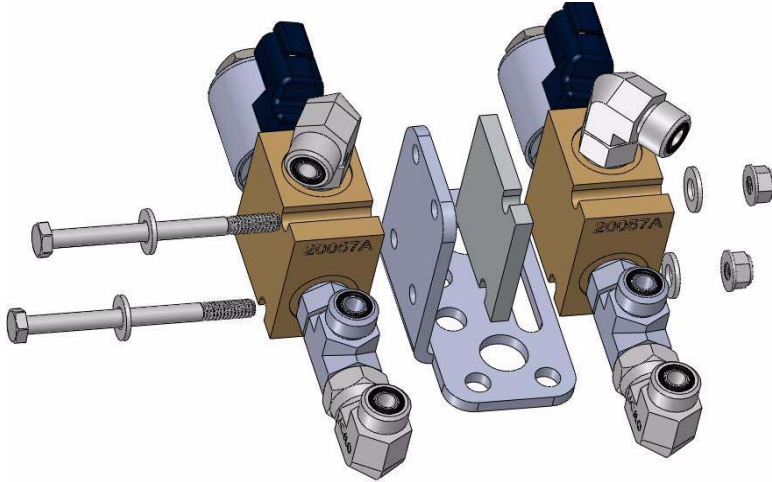
**Table 2-5 Solenoid Assembly Components**

| Item | Description                                    |
|------|--|
| 1    | Solenoid Assembly 12V NRML OPEN                |
| 2    | Straight Thread Elbow -6M ORFS, 9/16 M SAE-ORB |
| 3    | Run Tee Adapter -6 ORFS X -6 ORB               |
| 4    | Elbow Adapter 6M x 6F                          |



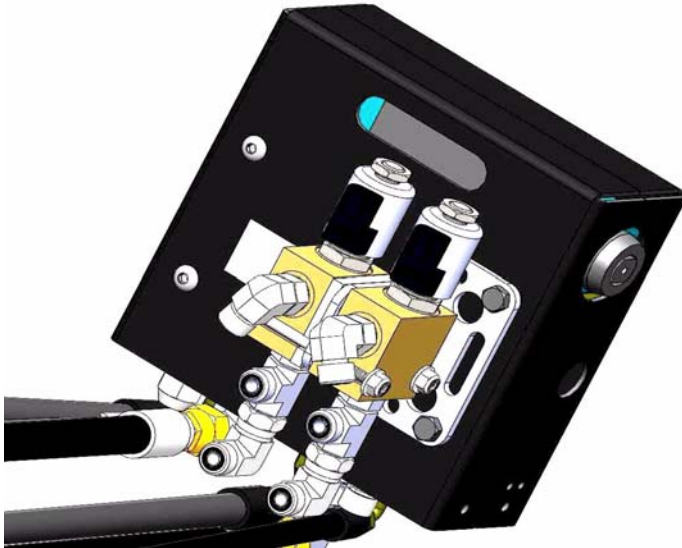
46. Fit the reactive solenoids to the bracket using the 1/4 inch x 3 1/4 inch UNC bolts, nuts and washers supplied in the kit. See *Figure 2-81*.
47. Tighten the bolts using two 7/16" wrenches.

**Figure 2-81 Assembling the Solenoids to the Bracket**



48. Place the valve top cover onto the valve.
49. Place the previously assembled reactive solenoid and brackets to the valve front. See *Figure 2-82*.
50. Insert the two bolts left over from the bottom valve cover and tighten with a 1/2" wrench.
51. Insert two of the original top cover hex socket bolts into the two remaining holes and tighten using a 3/16" Allen wrench.

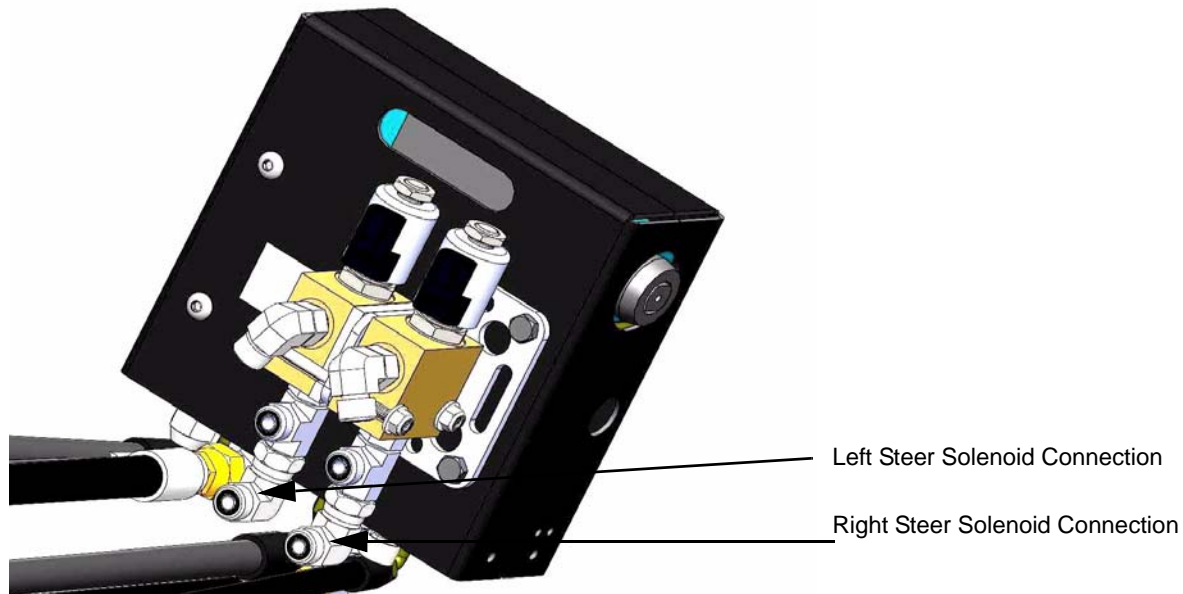
**Figure 2-82 Solenoid Assembly Mounted**



52. Connect the Right Steer hose free end to the right reactive solenoid elbow fitting as shown in *Figure 2-83*.

53. Connect the Left Steer hose free end to the left reactive solenoid elbow fitting as shown in *Figure 2-83*

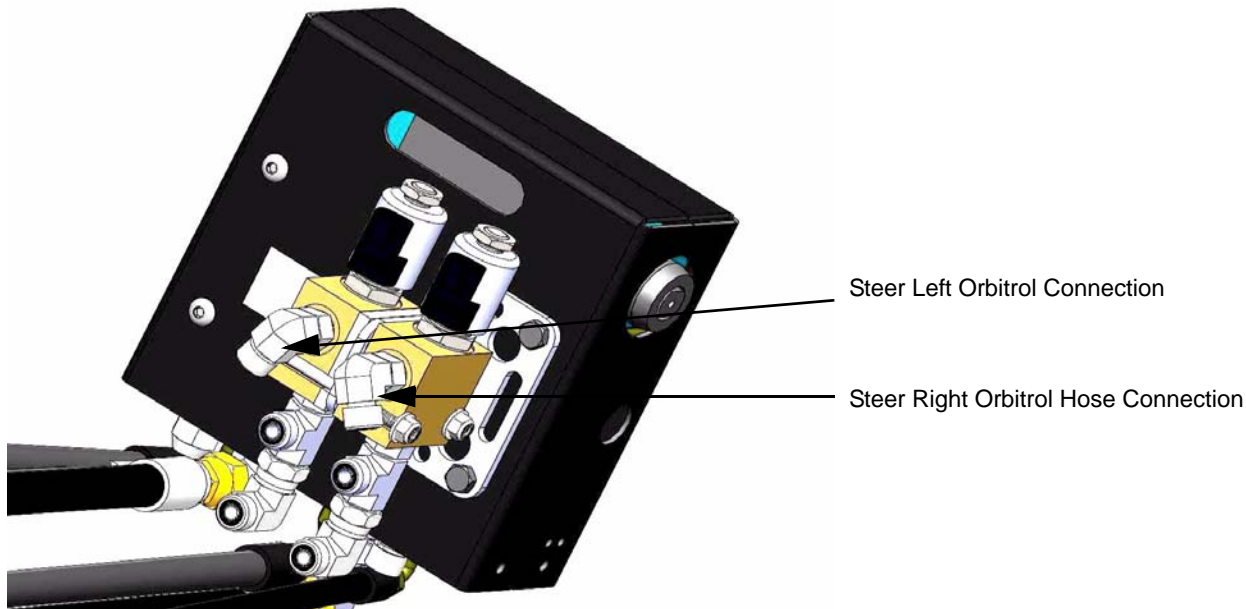
**Figure 2-83 Right And Left Steer Hose Solenoid Connection**



54. Connect the Steer Right Orbitrol hose to the right reactive solenoid elbow as shown in *Figure 2-84*.

55. Connect the Steer Left Orbitrol hose to the left reactive solenoid elbow as shown in *Figure 2-84*.

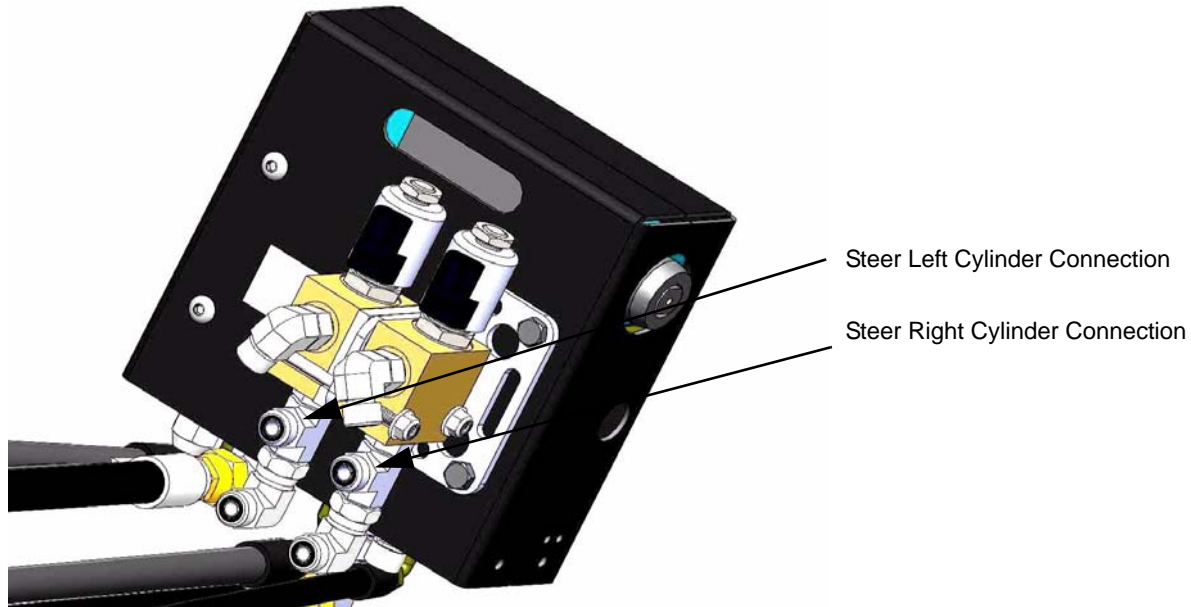
**Figure 2-84 Steer Right And Left Orbitrol Hose Connection To Reactive Solenoids**



**56.** Connect the Steer Right Cylinder hose to the right reactive solenoid tee fitting as shown in *Figure 2-85*.

**57.** Connect the Steer Left Cylinder hose to the left reactive solenoid tee fitting as shown in *Figure 2-85*.

**Figure 2-85 Steer Right Cylinder Hose Connection to Right Reactive Solenoid**



**58.** The steering valve is now installed.

---

**Note:** Do not replace the removed panels until all the valve cables have been connected and the hydraulic hoses have been checked for leaks and the relief pressure adjusted.

---

## Steering Valve Installation Checklist

1. Ensure the Reactive Solenoid bracket is tight.
2. Ensure the Steering valve mounting screws are tight.
3. Ensure the Pressure hose is connected to the correct port on Steering Valve and vehicle Pressure line.
4. Ensure the Tank hose is connected to the correct port on Steering Valve and existing vehicle Return line.
5. Ensure the LS-OUT hose is connected to correct port on Steering Valve and vehicle LS port.
6. Ensure the LS ORBITROL hose is connected to correct ports at both ends.
7. Ensure the Right Reactive Solenoid, Right Cylinder and Right Orbitrol hoses are connected correctly at both ends.
8. Ensure the Left Reactive Solenoid, Left Cylinder and Left Orbitrol hoses are connected correctly at both ends.
9. Ensure the Pressure transducer is installed and tight.
10. Ensure All hydraulic hose fittings are tight.
11. Ensure there is protected Hose routing and there are cable ties on all hoses.

# Wheel Angle Sensor (WAS) Installation

---

This **Wheel Angle Sensor Installation** chapter information is provided in the following sections:

- *Installing Mounting Brackets*
- *Cutting Linkage Rods to Length*
- *Assembling Linkage Rod Hardware*
- *Attaching and Adjusting Wheel Angle Sensor Linkage Rods*

---

**Note:** The Wheel Angle Sensor is optional equipment and is not provided with the installation kit. The Wheel Angle Sensor installation instructions are provided for special installations, when required. The decision to use this option are left up to the installer and customer.

---

## Installing Mounting Brackets

1. Identify the Wheel Angle Sensor mounting location on the front right steering axle. See *Figure 3-1*.
2. Remove the two bolts using a 13mm socket and ratchet. See *Figure 3-1*.

**Figure 3-1** Wheel Angle Sensor Mounting Location





3. Mount the Wheel Angle Sensor bracket and insert the two previously removed bolts and tighten using a 13mm socket and ratchet. See *Figure 3-2*.

**Figure 3-2 Mounting Wheel Angle Sensor Bracket**



4. Mount the Wheel Angle Sensor on the bracket with the electrical connector facing the vehicle rear. See *Figure 3-3*.

**Figure 3-3 Mounting the Wheel Angle Sensor**



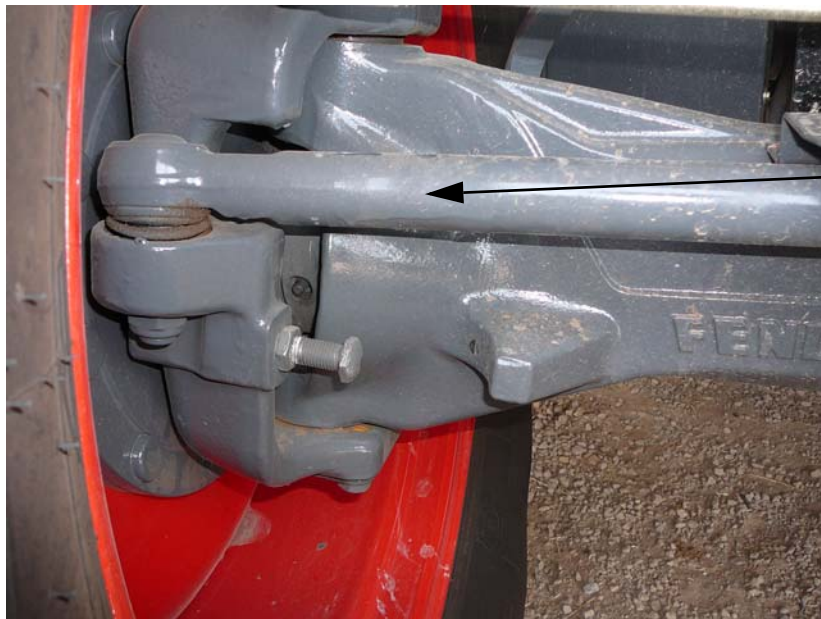
5. Attach the Wheel Angle Sensor to the bracket.
6. Tighten the mounting bolts with a 9/16" wrench. See *Figure 3-4*.

**Figure 3-4 Tightening Wheel Angle Sensor Mounting Bolts**



7. Locate the right front tie rod. See *Figure 3-5*.

**Figure 3-5 Right Front Tie Rod**



Tie Rod

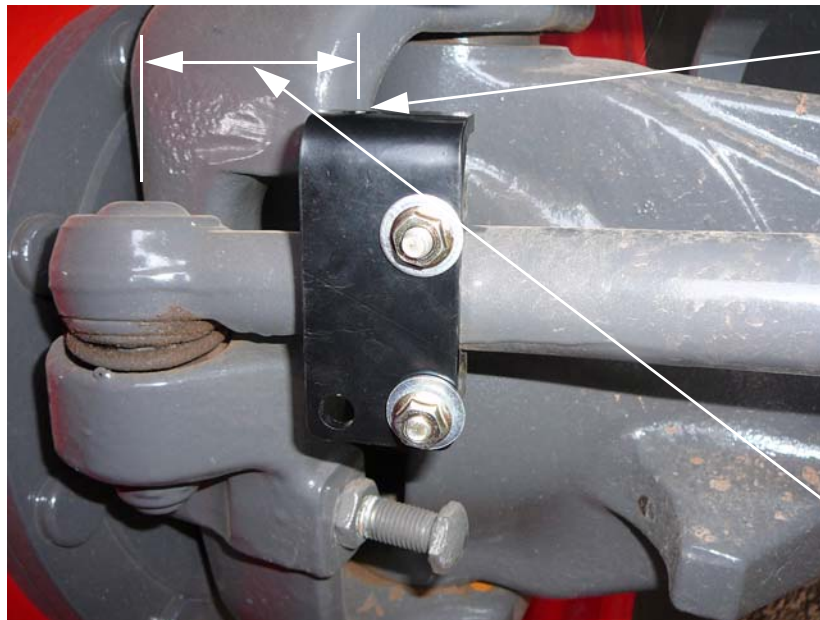
8. Attach the linkage bracket using a muffler clamp but do not completely tighten the clamp now. See *Figure 3-6*.

**Figure 3-6 Linkage Bracket Attached**



9. Adjust the bracket position on the tie rod so the hole on the top of the “L” bracket is 110mm away from tie rod end pivot center point. See *Figure 3-7*.
10. Tighten the two bolts using a 13mm socket and ratchet.

**Figure 3-7 Linkage Bracket Mounting Position**



Hole on Bracket Top

Bracket Distance From Pivot Center Point

## Cutting Linkage Rods to Length

**Note:** Before cutting the linkage rods, verify the Wheel Angle Sensor brackets will attach to the vehicle as shown in this manual and they are attached the correct distance from any reference points shown. If this is not possible, do not cut the rods until it is determined if these lengths will work for your installation. Due to possible variations in the mounting positions, these measurements could be different. These measurements are provided as a reference only. The installer is responsible for ensuring the rods are cut to the proper length.

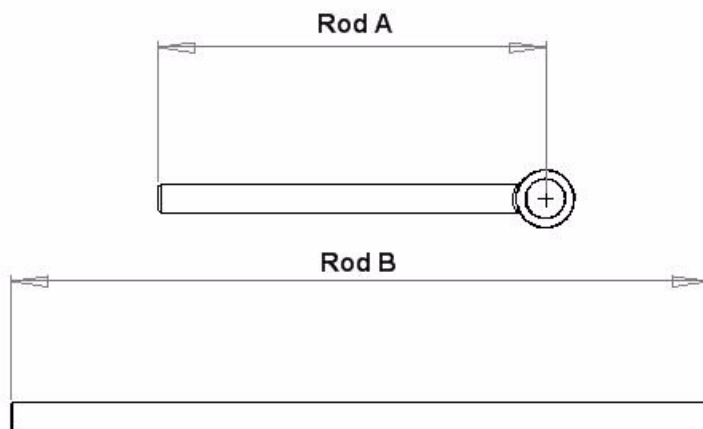
1. Measure and mark the two linkage rods for cutting, according to the length shown in *Table 3-1*.

**Note:** *Figure 3-8* shows the measurement points used to properly cut the linkage rods.

**Table 3-1** Linkage Rod Cut Lengths

| Item  | Length              |
|-------|---------------------|
| Rod A | 4.0 inches (102 mm) |
| Rod B | 7.9 inches (201 mm) |

**Figure 3-8** Linkage Rod Cut Length Measurement Points





2. Use a hack saw to cut the linkage rod to length while it is held in a bench vise. See *Figure 3-9*.

**Figure 3-9** Linkage Rod Cutting



## Assembling Linkage Rod Hardware

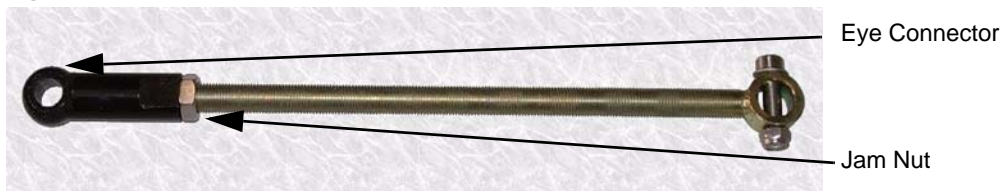
1. Attach a jam nut to the end of Rod A. See *Figure 3-10*.
2. Connect the eye connector to the Wheel Angle Sensor rod end, as shown in *Figure 3-10*.

---

**Note:** The threaded rods must be cut to the correct lengths before final assembly.

---

**Figure 3-10** Rod A Assembled





3. Attach the jam nuts to each end of linkage Rod B
4. Attach the ball joints to both ends of the linkage arm as shown in *Figure 3-11*.

---

**Note:** The bolts for the ball joints should be facing the same direction as shown in *Figure 3-11*.

---

**Figure 3-11 Linkage Rod Assembled**



---

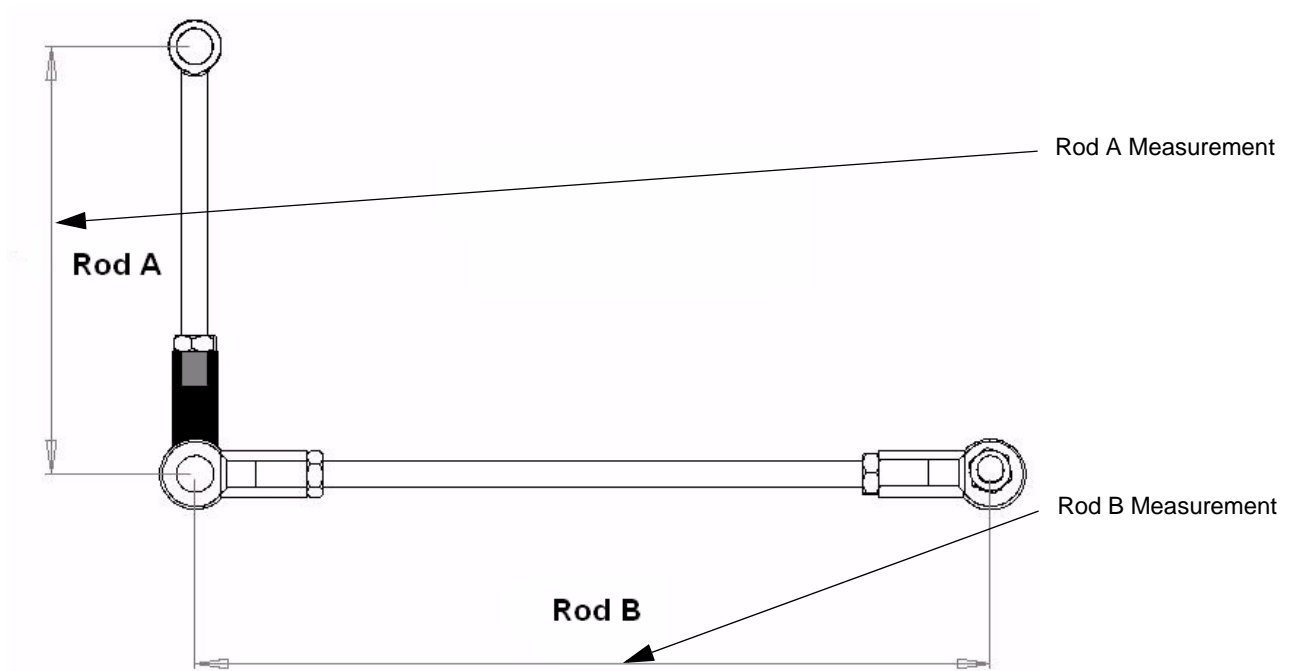
**Note:** The linkage rod after-assembly center-to-center lengths are shown in *Table 3-2*. *Figure 3-12* shows the measurement points for the assembled linkage rods.

---

**Table 3-2 Assembled Linkage Rod Length**

| Item  | Length       |
|-------|--------------|
| Rod A | 5.2" (132mm) |
| Rod B | 9.9" (252mm) |

**Figure 3-12 Linkage Rod Measurement Points (Assembled)**



## Attaching and Adjusting Wheel Angle Sensor Linkage Rods

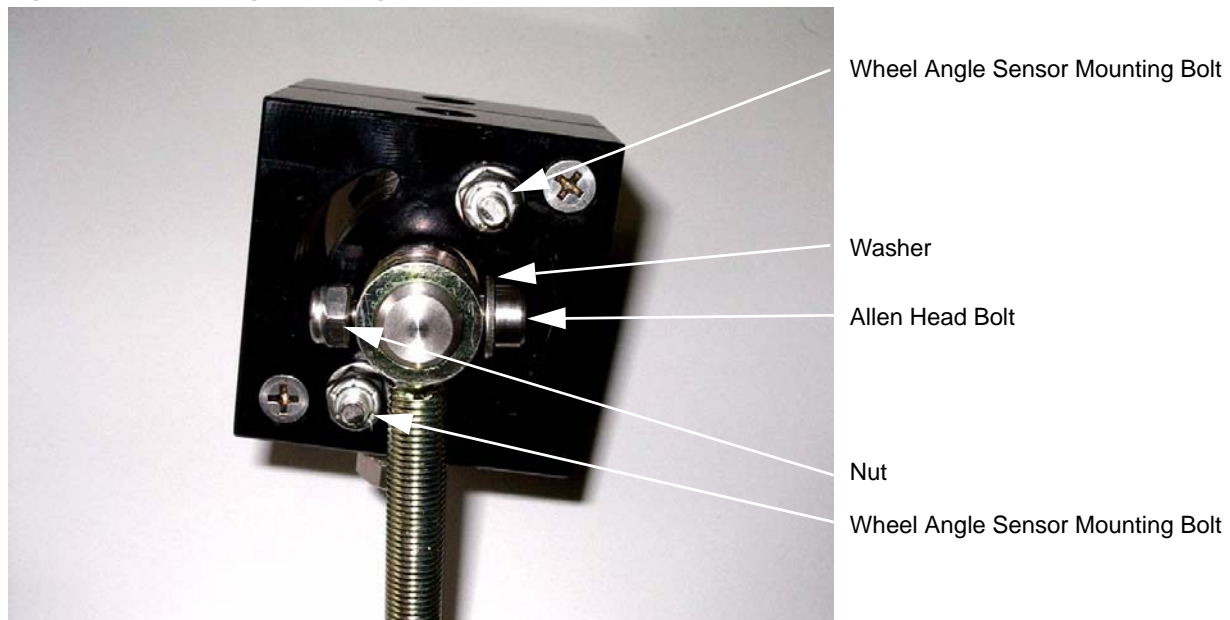
1. Install the short linkage arm on the Wheel Angle Sensor shaft.
2. Attach the Wheel Angle Sensor linkage rod to the Wheel Angle Sensor. See *Figure 3-13*.

---

**Note:** Leave the Wheel Angle Sensor mounting bolts loose so the sensor can be rotated after installation on the vehicle.

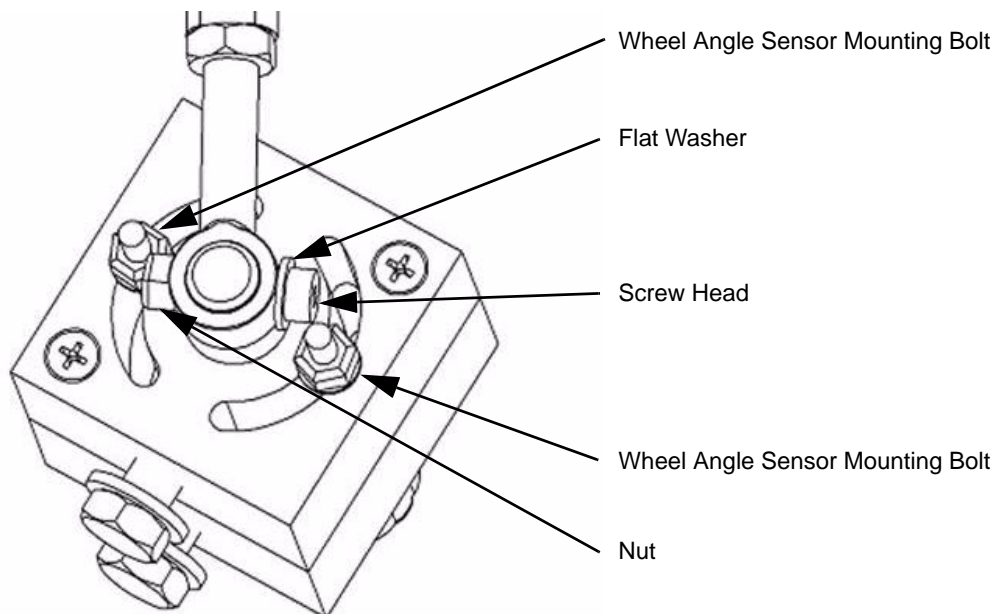
---

**Figure 3-13 Attaching the Linkage Arm to Sensor (Shown on Bench)**



3. Ensure a flat washer is placed under the screw head when attaching the linkage rod to the sensor shaft. See *Figure 3-14*.

**Figure 3-14 Washer on Shaft Screw**



---

**Note:** The washer should be on the bolt head side and not the nut side of the assembly.

---

---

**Note:** Do not turn the steering system or drive the vehicle before the Wheel Angle Sensor has been adjusted using the AutoSteer Calibration screens. The potentiometer can only rotate a maximum of 180 degrees and if it is rotated beyond its mechanical stops, it will be permanently damaged.

---

---

**Note:** Do not attach the remaining linkage arm.

---

4. Install the long threaded linkage on the tie rod bracket using a ball joint. See *Figure 3-15*.
5. Tighten the ball joint to the bracket with a 1/2" and 9/16" wrench.

---

**Note:** Do not attach linkage rod to Wheel Angle Sensor rod at this time.

---

**Figure 3-15 Linkage Rod Connected to Tie Rod Bracket**



Tie Rod Bracket Linkage Rod Attached

6. With the linkage rods disconnected, turn the steering wheel so the wheels are centered (the vehicle will travel straight ahead when moving).
7. Temporarily attach the linkage rods.

---


**Note:** Never attach the linkage rods to Wheel Angle Sensor rod and turn the steering system manually or automatically until the fit has been verified. The linkage rods must remain apart while the steering system is turned to the maximum right and left positions and then temporarily attached at these positions. Failure to leave the rods detached may cause the Wheel Angle Sensor or vehicle to become damaged.

---



**Note:** After the linkage rods are assembled in the following steps, they should move freely without touching any other parts and without overextending. Make any necessary adjustments to the linkage rods if there is an interference problem.

---

|   |   |
|---|---|
|  | <p style="text-align: center;"><b>⚠ WARNING</b></p> <p>Always shut down the vehicle when working around the steering axle and checking or adjusting the Wheel Angle Sensor rod lengths. The steering axle could move suddenly and cause severe injury or death.</p> |
|---|---|

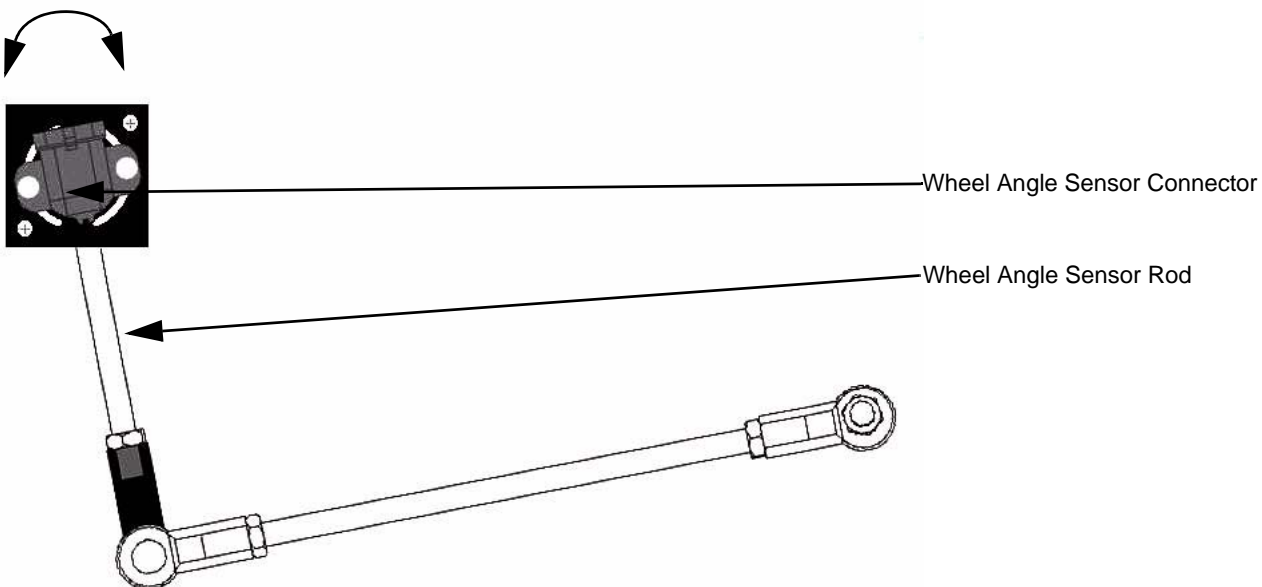
8. Rotate the Wheel Angle Sensor potentiometer on top of the mounting block so that the wire connector is parallel to the Wheel Angle Sensor rod. See *Figure 3-16*.

**Note:** The vehicle should be parked in a straight ahead position when adjusting the potentiometer angle.

---

9. Tighten the potentiometer bolts with a 3/8" wrench and 5/32" Allen wrench.

**Figure 3-16 Adjusting Potentiometer Angle**



10. Disconnect the linkage rods and turn the steering wheel manually to the full left position.
11. Reattach the linkage assembly and verify that the sensor will not be damaged. See *Figure 3-17*,
12. Adjust the rod lengths as necessary.

**Figure 3-17 Full Left Wheel Angle Sensor Test**



13. Disconnect the linkage rods and turn the steering wheel manually to the full right position.
14. Reattach the linkage assembly and verify the sensor will not be damaged. See *Figure 3-18*.
15. Adjust the linkage rod lengths as necessary.

**Figure 3-18 Full Right Wheel Angle Sensor Test**



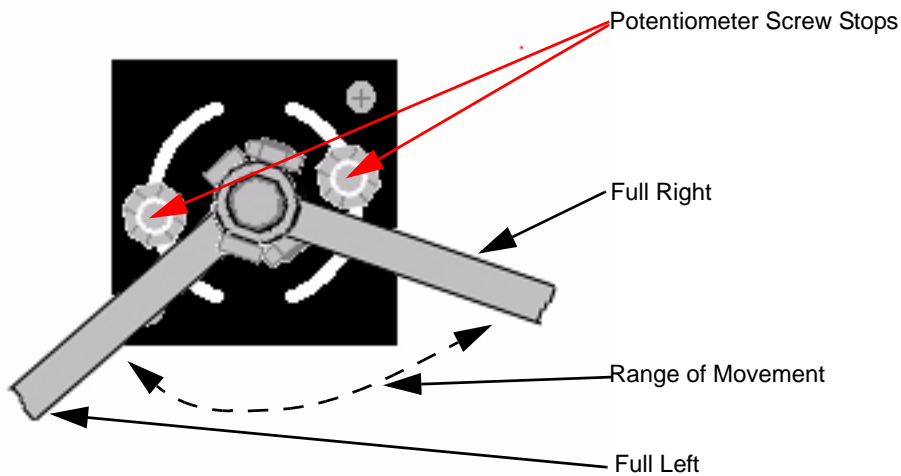
16. Rotate the sensor, adjust the length of either linkage arm and/or reposition the sensor mounting bracket on the vehicle frame (if necessary) to get the maximum sensor travel.
17. Test the remaining linkage arm for length at hard left and hard right to ensure sensor travel is not exceeded.

---

**Note:** The maximum movement is reached when the Wheel Angle Sensor rod sweeps from approximately 3/16 inch (5mm) from both stop bolts when the steering system is turned to the maximum right and left positions. See *Figure 3-19*.

---

**Figure 3-19 Maximum Sensor Movement (as Seen from Bottom)**



**Note:** An Ohm meter can also be used to determine if there is enough sensor movement. Connect the Ohm meter to pins A and B of the Wheel Angle Sensor. Measure the Ohm reading at the maximum left and right position. After subtracting the smaller number from the larger number, there should be at least a 3.75 kilohms change. The reading should also never go below 1.6 kilohms or higher than 6.6 kilohms as this is reaching the limits of the potentiometer and could damage the sensor.

---

18. When all adjustments are complete, tighten all linkage rod lock nuts and bolts and the Wheel Angle Sensor rod. See *Figure 3-20*.
- 

**Note:** A 1/2" and two 9/16" wrenches are required to tighten the connections.

---

**Figure 3-20 Linkage Rod Ball Joint Bolt (Different Vehicle Shown)**



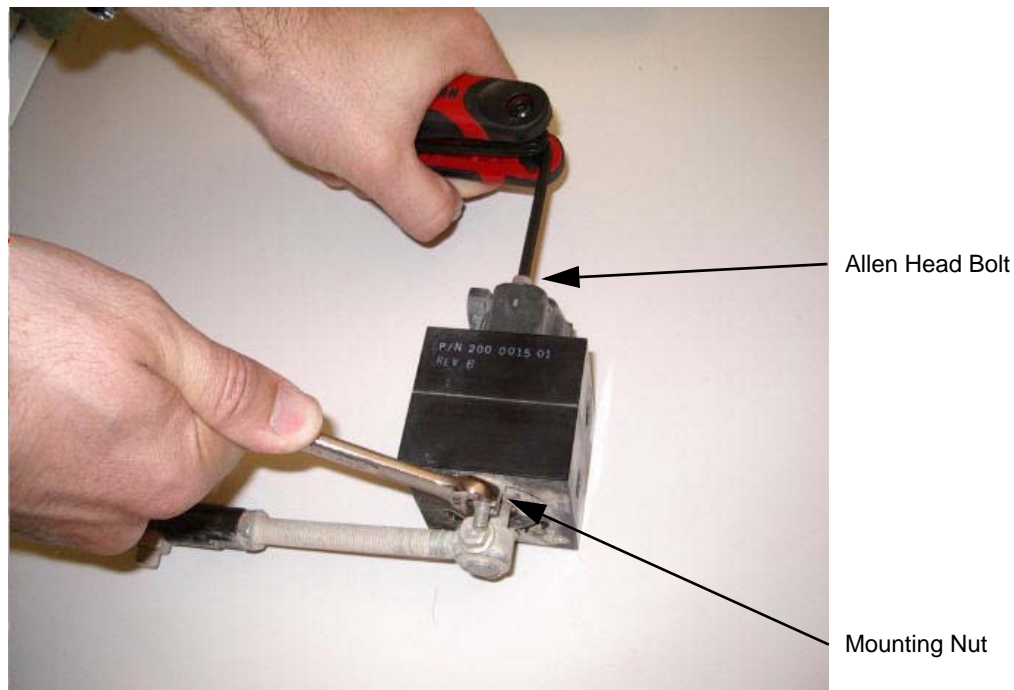
19. Tighten the two screws securing the potentiometer to the Wheel Angle Sensor, after final adjustments. See *Figure 3-21*.

---

**Note:** Use a 1/8" hex key and a 3/8" wrench.

---

**Figure 3-21 Potentiometer Mounting Bolts (Shown on Bench)**





20. The Wheel Angle Sensor installation is now complete. See *Figure 3-22*.

**Figure 3-22 Wheel Angle Sensor Installed**







# SA Module Installation

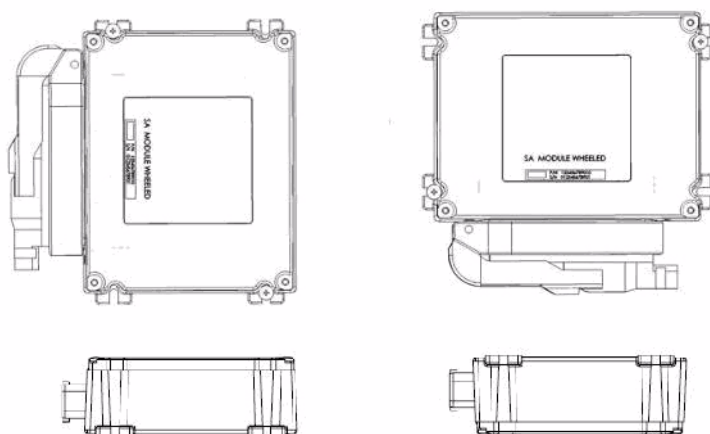
The **SA Module Installation** chapter contains information in the following sections:

- *SA Module Mounting Orientation*
- *Mount the SA Module*

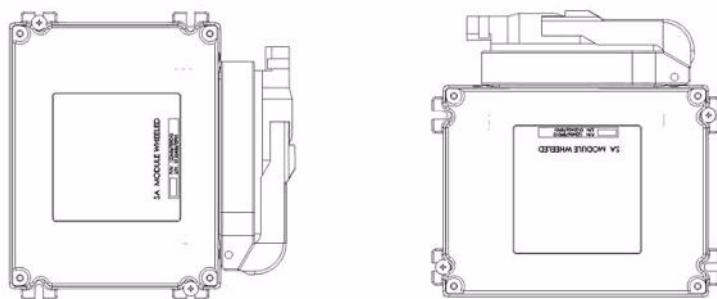
## SA Module Mounting Orientation

The SA Module can also only be mounted in certain positions. *Figure 4-1* shows the correct mounting positions and *Figure 4-2* shows incorrect mounting positions.

**Figure 4-1 Correct SA Module Mounting Orientations**



**Figure 4-2 Incorrect SA Module Mounting Orientations**



## Mount the SA Module

The rear fender is the recommended SA Module mounting location for this series of vehicles.

1. Prepare the SA Module Bracket for installation by attaching two screws on the “L” bracket side of the bracket. See *Figure 4-3*.

---

**Note:** Do not tighten screws. Leave enough room for the SA Module to slide beneath the screws when it is mounted to the bracket.

---

**Figure 4-3** Attach Screws to Bracket “L”-side



2. Locate the vehicle rear right fender. See *Figure 4-4*.
3. Locate plastic insert shown and remove it. See *Figure 4-4*.

---

**Note:** Alternative mounting locations can be used if the location shown is not available.

---

**Figure 4-4** SA Module Mounting Location



4. Mount the SA Module bracket and secure with a bolt and washer as shown in *Figure 4-5*.
5. Place a washer and nyloc nut on the tire side of the fender and tighten using a 1/2 inch wrench, 1/2 inch socket and ratchet.

**Figure 4-5 SA Module Bracket Mounted**



6. Slide the SA Module into place. Mount it by installing the other two screws and tighten all four with a #2 stubby Phillips screwdriver.
7. *Figure 4-6* shows the SA Module mounted.

**Figure 4-6 SA Module Mounted**



# Display Installation

---

This **Display Installation** chapter contains information in the following sections:

- *Introduction*
- *Installation Procedure*

## Introduction

This chapter provides instructions for installing the cab RAM mount to enable Display mounting. Refer to your Display user manual for instructions on installing the Display.

If the location shown for mounting the Display is being used by another piece of equipment, other mounting locations can be used. However, for best performance use the recommended location shown.



## Installation Procedure

1. Locate the pillar on the cab right side. See *Figure 5-1*.
2. Locate top plastic cover. See *Figure 5-1*.

---

**Note:** Alternative mounting locations can be used if the location shown is not available.

---

**Figure 5-1** Display Mounting Location



3. Remove top plastic cover from the pillar front to reveal the mounting threads as shown in *Figure 5-2*.

**Figure 5-2 Removing the Mounting Thread Plastic Cover**



4. If present, remove the two retaining bolts on the pillar back using a 17mm socket and ratchet. See *Figure 5-3*.

**Figure 5-3 Retainer Bolts**



5. Attach the RAM mount ball to mounting bracket using the four screws and lock nuts provided. See *Figure 5-4*.
6. Tighten the mounting screws using a 3/8" wrench and #2 Phillips screwdriver.

**Figure 5-4** RAM Mount Attached to Bracket



7. Mount the Display bracket on pillar. See *Figure 5-5*.

---

**Note:** The bracket fits over the factory accessory bracket, if present.

---

8. Insert one bolt and washer in the bracket side facing the vehicle front.

**Figure 5-5 Mounting Bracket on Pillar**



9. Insert one bolt and one washer in the two pillar holes on the side facing the vehicle rear. See *Figure 5-6*.

---

**Note:** If there is no accessory bar present, two washers need to be inserted between the pillar rear and the bracket on both bolts.

---

**Figure 5-6** Remaining Bolt Installation



---

**Note:** Refer to the Display user manual for the remaining Display specific installation instructions.

---

# Roof Module Installation


---

This **Roof Module Installation** chapter contains information in the following sections:

- *Safety Notes*
- *Roof Module Installation*

## Safety Notes

- The AutoSteer system must be powered OFF when installing or removing the Roof Module.
- The Roof Module must always be firmly secured to the Roof Rail using the supplied hardware whenever the vehicle is in operation to prevent the Roof Module from releasing from its bracket and falling.
- The Roof Module must be removed when transporting the vehicle at speeds above 30 mph (50 km/h).
- Ensure you are in a stable position on the vehicle or ladder when removing the Roof Module, so that you do not fall or drop the Roof Module.
- Use a ladder to install the AutoSteer Roof Rail.

|   |  |
|---|--|
|  | <p style="text-align: center;"><b>⚠ WARNING</b></p> <p>To prevent injury from falling, ensure you are in a stable position on the vehicle when installing or removing the Roof Rail and Roof Module. If the vehicle does not provide a safe platform, use a ladder to safely access the vehicle roof while installing or removing the Roof Rail and Roof Module.</p> |
|---|--|



## Roof Module Installation

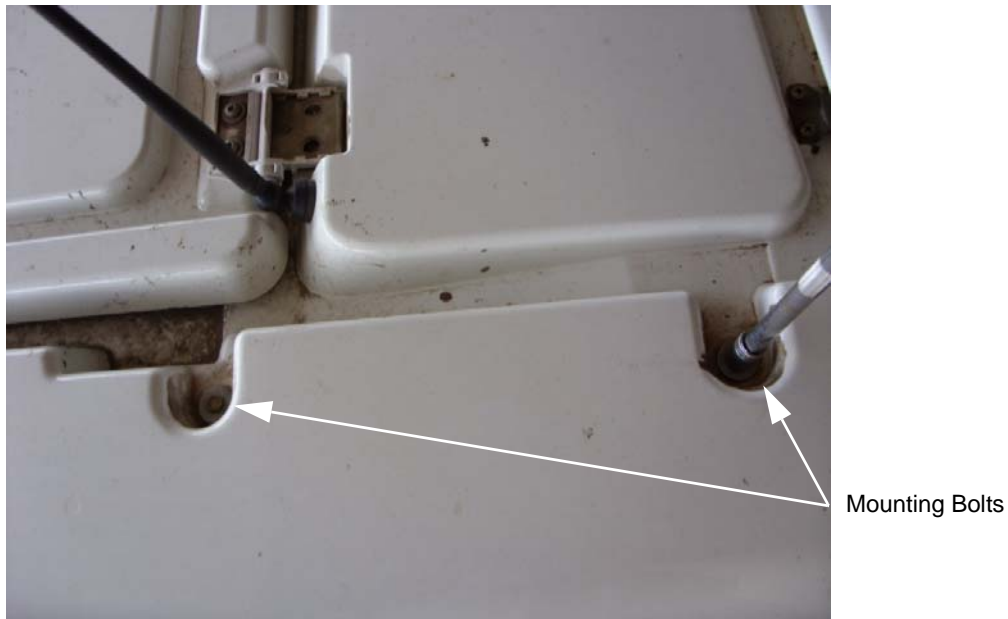
1. Locate the roof bolts on the cab top.
2. Remove the four bolts with a 10mm socket and ratchet. See *Figure 6-1*.

---

**Note:** The existing bolts will be reused. Leave the flat washers on the roof top. Only the two bolts on the right side of the cab are shown. Repeat bolt removal process on the vehicle left side.

---

**Figure 6-1** Roof Module Mounting Bolts (Vehicle Right Side)



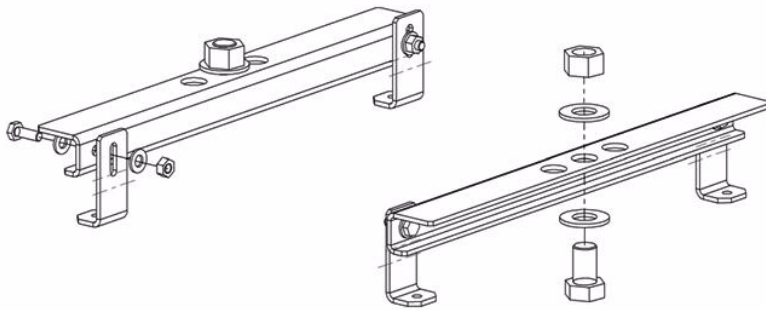
3. Assemble the roof brackets as shown in *Figure 6-2*.

---

**Note:** Do not fully tighten the roof bracket assembly bolts yet.

---

**Figure 6-2 Roof Module Bracket Assemblies**



4. Mount the roof brackets. See *Figure 6-3*.
5. Insert the roof bolts and tighten with a 10mm socket and ratchet.

**Figure 6-3 Roof Module Brackets Attached**



6. Tighten the bracket bolts using a 7/16 wrench, 7/16 socket and ratchet. See *Figure 6-4*.

**Figure 6-4 Tightening Roof Bracket Bolts**



7. Attach the Roof Module bracket using the bolts, washers and nuts supplied. See *Figure 6-5*.
8. Tighten securely with a 15/16" socket and ratchet.

---

**Note:** Align the Roof Rail across the brackets so the same mounting holes are used on both the right side bracket and left side bracket. The Roof Rail must be mounted perpendicular across the cab roof.

---

**Figure 6-5 Attaching the Roof Rail**



9. Remove the locking pin from the Roof Rail. See *Figure 6-6*.

---

**Note:** Press the Locking Pin release button to enable pin removal.

---

**Figure 6-6** Removing the Quick Release Pin



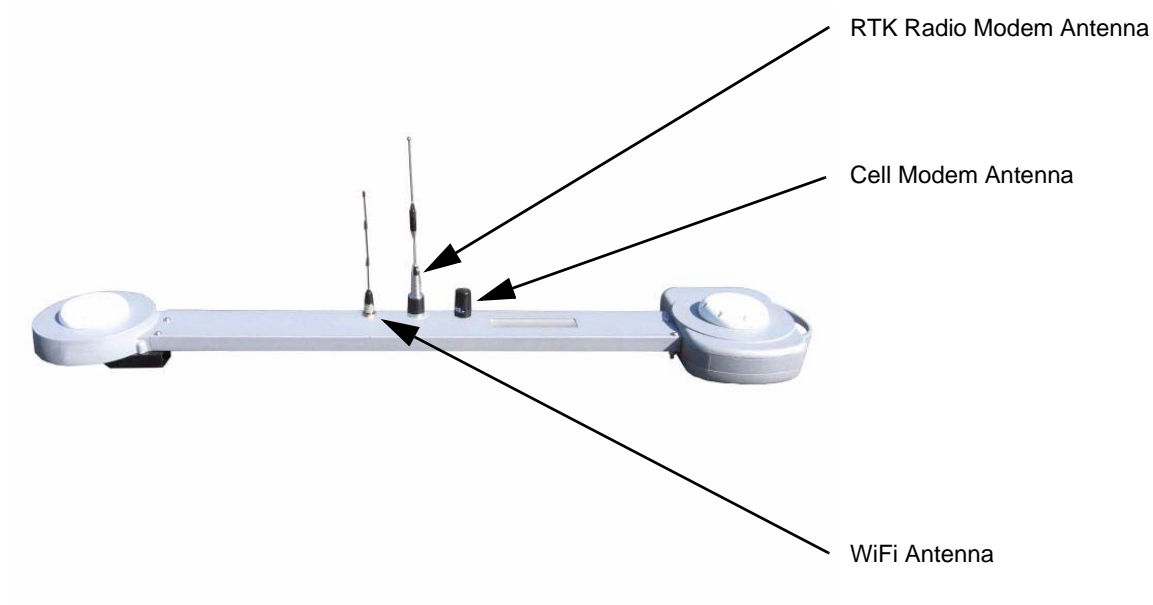
10. Attach the three antennas to the proper Roof Module antenna connections. See *Figure 6-7*.

---

**Note:** Hand tighten the connections. Do not over tighten.

---

**Figure 6-7 Attach the Antennas**



11. Place the Roof Module on the Roof Rail. See *Figure 6-8*.

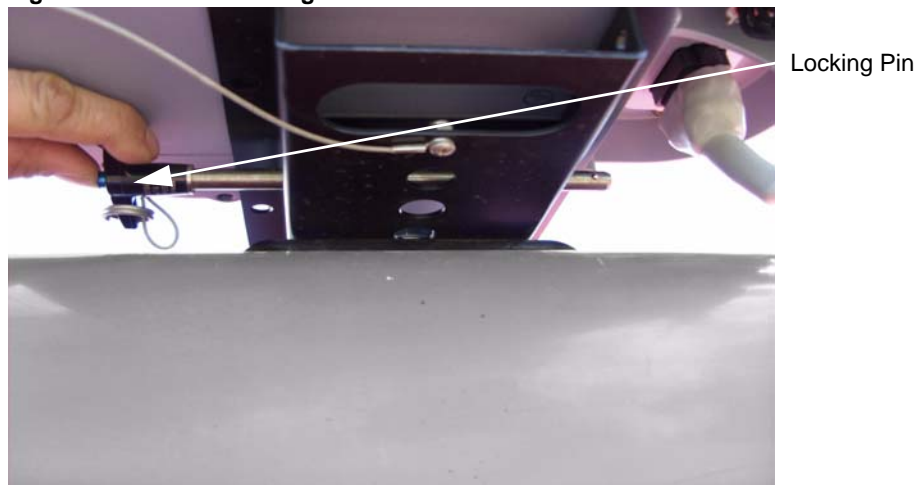
**Figure 6-8 Attach Roof Module**





- 12.** Insert the Locking Pin into the Roof Rail. See *Figure 6-9*.

**Figure 6-9** Insert Locking Pin



---

**Note:** The Locking Pin can be inserted from either side of the Roof Rail.

---

- 13.** The Roof Module is now installed.

# Connecting System Cables

---

This **Connecting System Cables** chapter provides information for connecting the Main Cable Harness and the SA Module Cable Harness to the various vehicle and AutoSteer components in the following sections:

- *SA Module Harness*
  - *SA Module Connection*
  - *Wheel Angle Sensor Connection*
  - *Steering Valve Connection*
- *Main Cable Harness*
  - *Roof Module*
  - *Attach the Main Cable Harness to your Display harness.*
- *Power Supply Connection*
  - *Cab Power Connection*
  - *Battery Power Connection*

## SA Module Harness

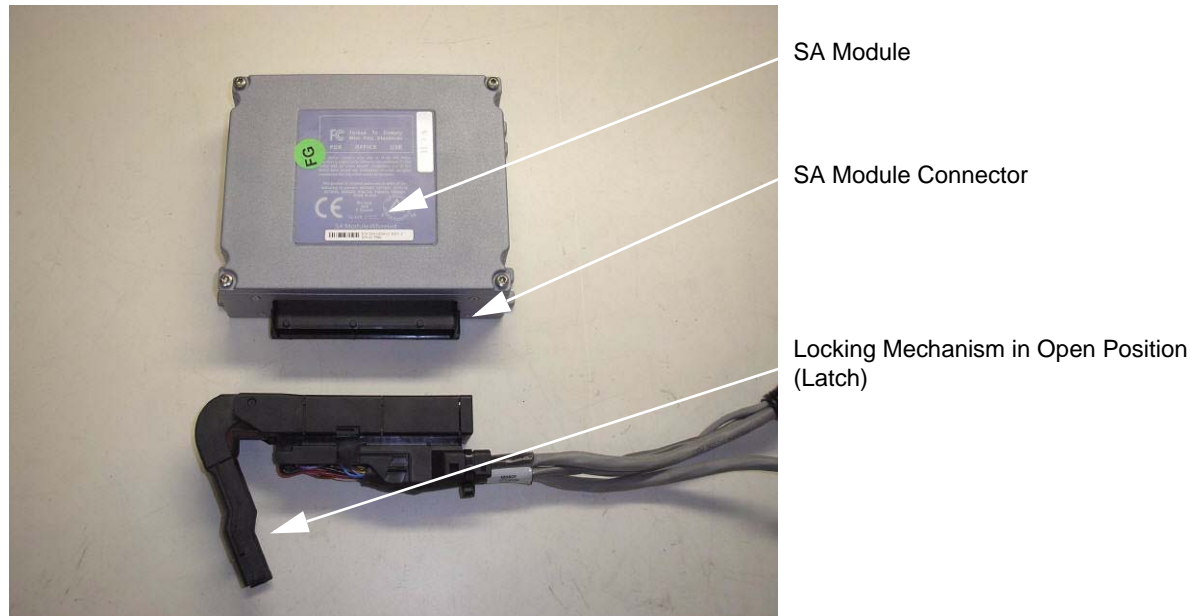
This **SA Module Harness** section contains the following sub-sections:

- *SA Module Connection*
- *Wheel Angle Sensor Connection*
- *Steering Valve Connection*

## SA Module Connection

1. Align the SA Module Harness connector to the SA Module. See *Figure 7-1*.
2. Open the connector latch lever. See *Figure 7-1*.

**Figure 7-1** Connecting SA Module Connector



3. Press the SA Module Harness connector onto the SA Module connector.

---

**Note:** You can damage the connectors if you force them into position. Do not force them together or use tools.

---

4. Press the latch lever closed until it clicks and locks the connector. See *Figure 7-2*.

**Figure 7-2** Closing the SA Module Connector



---

**Note:** If you need to disconnect the SA Module connector, you must open the latch lever before attempting to pull the connectors apart.

---

5. Close the cable connector locking mechanism as shown in *Figure 7-3*.

**Figure 7-3 SA Module Connector (closed).**



## Wheel Angle Sensor Connection

---

**Note:** This connection to the Wheel Angle Sensor is only required when using the AutoSteer Wheel Angle Sensor.

---

1. Route the SA Module Wheel Angle Sensor cable to the vehicle front right-hand side where the Wheel Angle Sensor was previously mounted.
2. Attach the SA Module Harness Wheel Angle Sensor connector to the Wheel Angle Sensor. See *Figure 7-4*.
3. Secure the SA Module Harness cable with cable ties.

**Figure 7-4 Connecting the Wheel Angle Sensor Plug**



## *Steering Valve Connection*

1. Route and secure the steering cable from the SA Module to the Steering valve.
2. Connect the 4-pin connector to the Steering Valve. See *Figure 7-5*

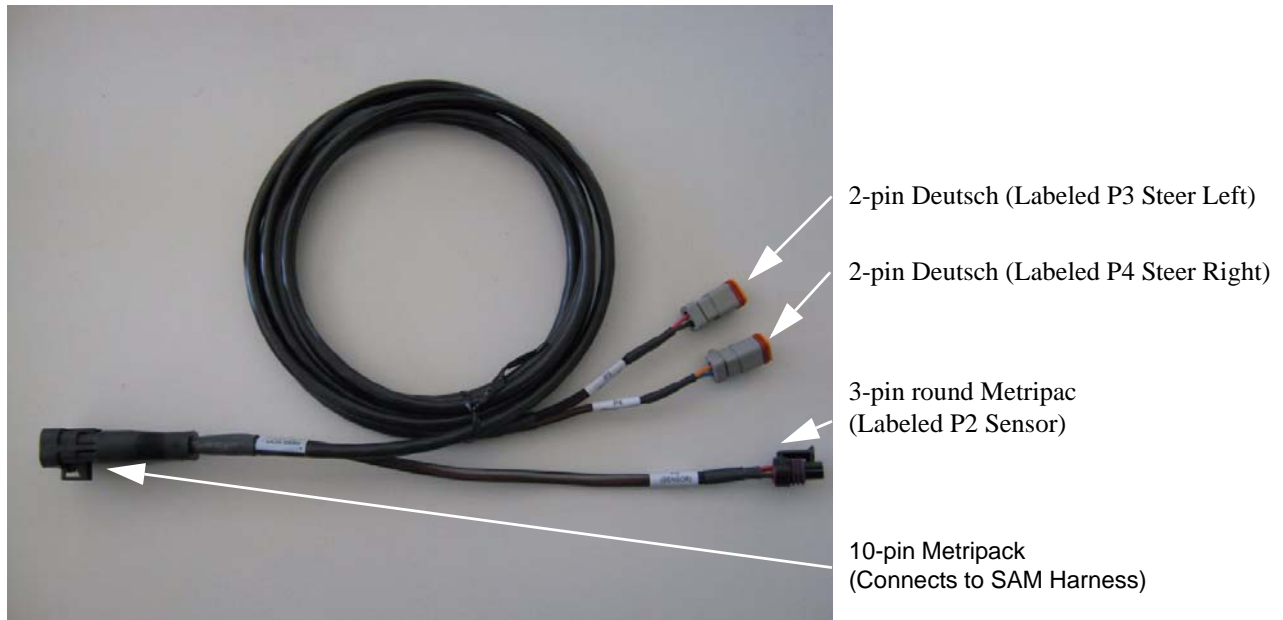
**Figure 7-5 Plug in Steering Harness Connector (Shown on Bench)**





3. Locate the reactive steering harness (PN: 201-0480-01). See *Figure 7-6*.

**Figure 7-6 Reactive Steering Harness**



4. Locate the reactive steering harness and connect the 10-pin Metripack to the SA Module Harness. See *Figure 7-7*.

**Figure 7-7 Plug in Enable Valve (Shown on Bench)**



5. Plug the 3-pin connector into the Pressure Transducer on the Steering Valve. See *Figure 7-8*.

**Figure 7-8 Plug Connector into Pressure Transducer**



6. Route the two Deutsch plugs from the reactive steering harness (PN: 201-0480-01) to the reactive steering solenoids.
7. Connect the 2-pin Deutsch connector labelled Steer Left to the left reactive solenoid. See *Figure 7-9*.

**Figure 7-9 Left Reactive Solenoid Connection**



8. Connect the 2-pin Deutsch connector labelled Steer Right to the Right reactive solenoid. See *Figure 7-10*.

**Figure 7-10 Right Reactive Solenoid Connection**



## Main Cable Harness

This Main Cable Harness section contains the following sub-sections:

- *Roof Module*
- *Display*
- *Power Supply Connection*

### Roof Module

1. Attach the Main Cable Harness to the Roof Module. See *Figure 7-11*.

Orient the 12-pin connector so the word “TOP” on the cable connector is pointing upwards (towards the sky). Insert the cable connector into the Roof Module. Push the connector in until it “clicks” and locks in place. To remove, grasp the connector to compress the two side latches and pull away from the Roof Module.

---

**Note:** Do not force the connector. If the connector does not engage easily, check for the correct connector orientation.

---

**Figure 7-11 Roof Module Main Cable Harness Connection**



2. Attach the Ethernet connector to the Roof Module. See *Figure 7-12*.
3. Orient the Ethernet cable connector with the connector under the receiver so the contacts on the cable connector are pointing towards the back of the vehicle.

---

**Note:** This will usually be towards your right side if you are standing on the left side of the vehicle and looking towards the Roof Module.

---

4. Slide the cable connector into the receiver and rotate the plastic bayonet sleeve clockwise to lock the connector.
5. The bayonet sleeve will “click” when it fully engages and locks.

---

**Note:** To remove the cable, rotate the bayonet sleeve counterclockwise until it “clicks” and pull the connector down or away from the Roof Module.

---

---

**Note:** Do not force the connector. If the connector does not engage easily, check for the correct orientation of the connector.

---

**Figure 7-12 Roof Module Ethernet Connection**



6. Route the Main Cable Harness down the cab right side.
7. Locate the cable cab entry point. See *Figure 7-13*.

**Figure 7-13 Cable into the Cab Entry Point**



8. Open the entry point by depressing the steel clip and rotating the plate and foam anti clockwise. See *Figure 7-14*.

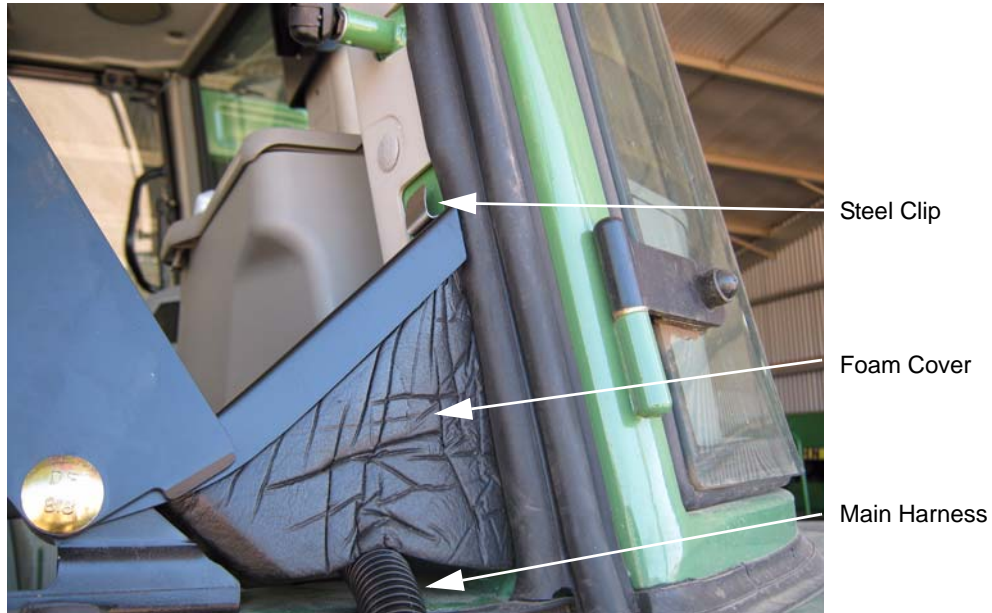
**Figure 7-14 Opening Cable Pass Through Entry Point**





9. Insert Main Harness into the cab. See *Figure 7-15*.
10. Rotate the foam clockwise onto the cable and back into the steel clip.

**Figure 7-15 Main Cable Harness Into the Cab**



11. Rotate the steel plate clockwise until it comes in contact with the cable. See *Figure 7-16*.

**Figure 7-16 Closing Steel Cover Over Main Cable Harness**



12. Connect the 12-pin data and 2-pin power connectors between the Main Cable Harness and the SA Module Harness. See *Figure 7-17*.

**Figure 7-17 Main Cable Harness and SA Module Harness Connections (Shown on Bench)**



## Display

1. Attach the Main Cable Harness to your Display harness.

---

**Note:** Refer to your Display user manual for instructions on connecting the Main Cable Harness connections to the correct ports and harnesses on the Display and Display cables.

---

## Power Supply Connection

The following sub-sections describe basic instructions for connecting the AutoSteer system to available vehicle power sources:

- *Cab Power Connection*
- *Battery Power Connection*

---

**Note:** Refer to your Display user manual before connecting the AutoSteer system to vehicle power.

---

The Main Cable Harness must be connected to a 3-pin 12V power source. Your Display user manual provides specific instructions for connecting power to the AutoSteer system and specifies the appropriate vehicle power source.

## *Cab Power Connection*

1. Locate the 12V power outlet on the cab right-hand side. See *Figure 7-18*.

---

**Note:** Use this 12V accessory power connector if the Display user manual specifies connecting to power inside the cab. Connect the power to the three-pin cab socket using the supplied adapter cable.

---

**Figure 7-18 Power Outlet Inside Cab**



---

**Note:** If the cab connection is not present or does not work, a battery power adapter cable P/N: 201-0156-01 can be ordered to provide a 3-pin AMP direct vehicle battery connection.

---

## Battery Power Connection

1. Locate the cab right-hand side vehicle battery cabinet. See *Figure 7-19*.
2. Connect to the vehicle battery if the Display user manual specifies a direct battery connection.

**Figure 7-19 Battery Location**



---

**Note:** A battery cable is provided with the AutoSteer system when a direct battery connection is required.

---

## Install Warning label

Install the Warning label on the cab window in a position that is easy to read and does not obstruct the driver's view of the road or surrounding obstacles. See *Figure 7-20*.

**Note:** Install the warning label with the language that best matches the operator's language. If necessary, install labels in multiple languages. Warning labels are provided in the following languages: English, French, German and Spanish.

---

**Figure 7-20 Autosteer Warning Label**



# Post-Installation Procedures and Information

The **Post-Installation Procedures and Information** chapter provides information in the following sections:

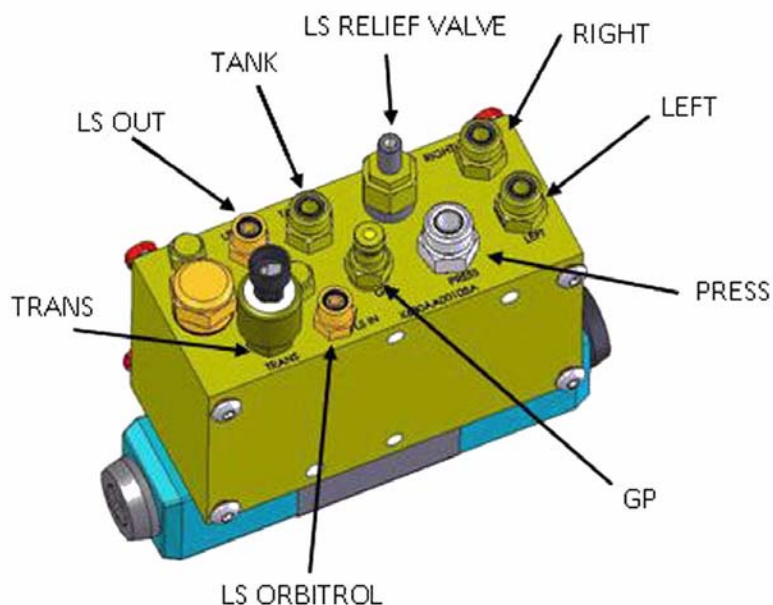
- *Adjust the Relief Valve*
- *Create New Vehicle*
- *Calibration and Tuning Guidelines*

After the completion of the AutoSteer system installation there are additional procedures that must be performed to enable full AutoSteer capabilities. The procedures in the following sections must be performed in order to test the installation for production readiness.

## Adjust the Relief Valve

The AutoSteer steering valve has a built-in Load Sense Relief Valve that limits the maximum pump pressure when using the AutoSteer system. The Relief Valve must be adjusted after you have completed the hydraulic installation. See *Figure 8-1*.

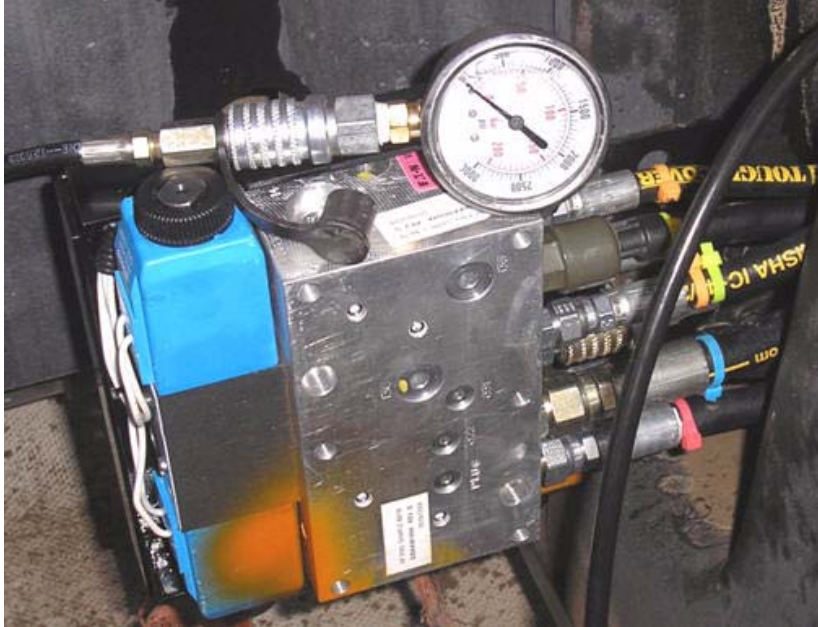
**Figure 8-1 Steering Valve Ports**





3. Install a 5000 psi pressure gauge on the Steering Valve diagnostics port labeled as **GP**. Use a short extension hose on the pressure gauge if necessary for easier reading. See *Figure 8-2*.

**Figure 8-2 Steering Valve with Test Pressure Gauge**



4. Put transmission into “neutral” or “park” position and turn on the hand brake.
5. Start the engine and leave it at low idle.

6. Immediately check for oil leaks on all hose connections that were previously opened.
7. Turn the steering wheel full right and then full left and check for correct manual steering response.

---

**Note:** Air in the hoses may cause a slight steering delay when the system is first powered up.

---

8. Observe the standby pump pressure shown on your pressure gauge. Standby pressure should be very low, or around 350 psi. If standby pump pressure is zero or less than 100 psi, you may have inverted the Pressure and Tank hoses.
9. With the display turned ON access the Hydraulic Valve window from the Steering Components Window and command the steering full Right and full Left. The front wheels will turn towards each of the directional stops. The maximum pump pressure will be indicated on the pressure gauge when the wheels hit the stops.

---

**Note:** The active vehicle must be the "standard hydraulic" type, for *Step 9.* to work. The default vehicle on a new system is OK but if the system has been moved from another vehicle a new vehicle profile may need to be created and selected before performing the Relief Valve adjustment.

---

10. Adjust the Relief Valve using a 5/32" Allen wrench and a 1/2" wrench, so the maximum pump pressure is 2800psi when the wheels hit the stops. See *Figure 8-3.*

**Figure 8-3 Adjust Relief Valve**



11. Tighten the jam nut on the relief valve once the correct pressure setting has been adjusted.
12. Remove pressure gauge by sliding the sleeve on the quick coupler.
13. Replace all removed covers and panels that were removed during the installation.

## Create New Vehicle

Once the entire system has been installed, the operator must first create a new vehicle profile. This configures the system so the User display can properly communicate with the various sensors and components on the vehicle. Follow the procedure below to create a new vehicle.

1. Make sure the User display is not powered ON.
2. Start the vehicle and take it to a clear area (such as an open field) where it can be calibrated.
3. Power up the AutoSteer system.
4. Follow the instructions provided in the Display user manual to create a new vehicle.

## Calibration and Tuning Guidelines

---

**Note:** For optimal steering performance, the AutoSteer system must be fully calibrated and then tuned.

---

# Final Hardware Installation Checklist

---

This **Final Checklist** chapter contains the verifications steps necessary after the installation of the AutoSteer system.

---

**Note:** The Final Hardware Installation Checklist is on the back of this page. Tear this page out of your manual and fill in the checklist after the installation. You should keep a copy of this checklist for future reference when servicing the vehicle.

---

Machine Model: \_\_\_\_\_ Year: \_\_\_\_\_ Serial #: \_\_\_\_\_

Customer Name: \_\_\_\_\_

Location/Address: \_\_\_\_\_

AutoSteer Installation Kit Part Number: \_\_\_\_\_

## NOTES

---

---

---

---

---

---

Name of Installer: \_\_\_\_\_ Date: \_\_\_\_\_

### System Installation Checklist

1. Wheel Angle Sensor installed and all fasteners are tight. (if installed) ☐
2. Display Bracket is installed and all fasteners are tight. ☐
3. Display is installed and all fasteners are tight. ☐
4. Roof Rail and Roof Module are installed and all fasteners are tight. ☐
5. SA Module is installed and all fasteners are tight. ☐
6. All cable ends are connected. ☐
7. All cables are secured with cable ties. ☐

### Hydraulic Installation Checklist

1. Steering Valve Bracket is installed and all fasteners are tight. ☐
2. Steering Valve is installed and all fasteners are tight. ☐
3. All hose fittings are tight. ☐
4. Check for oil leaks on all hydraulic connections. ☐
5. All hoses are routed and secured with cable ties. ☐
6. Manual steering is normal after the AutoSteer installation. ☐
7. Relief Valve is adjusted. ☐

### AutoSteer Performance Checklist

1. Complete AutoSteer system calibration. ☐
2. Complete AutoSteer system tuning. ☐
3. Check total Wheel Angle Sensor counts. (if installed) ☐ Value \_\_\_\_\_
4. Line acquisition is satisfactory. ☐
5. On-line steering is satisfactory. ☐
6. Manual override (kick-out) is working. ☐ Kick-out \_\_\_\_\_
7. Steering speed from lock-to-lock is satisfactory. ☐ Value \_\_\_\_\_ Sec.

---

**Note:** See the *Post-Installation Procedures and Information* chapter for additional information.

---